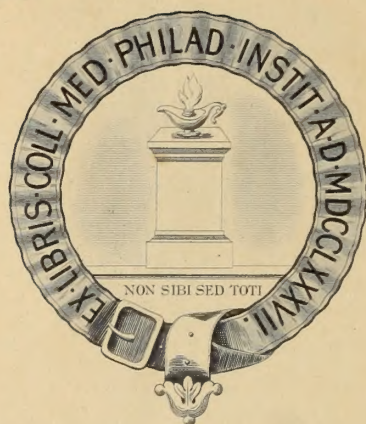


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VIRGINIA MEDICAL SEMI-MONTHLY.

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This Index is divided into TWO PARTS—FIRST, **Index of Contributors**; SECOND, **Index of Subjects**, in which italicized lines represent original articles.

Notices of books, colleges, deaths, journals, personals, proceedings of societies, etc., are indexed in the INDEX OF SUBJECTS under the respective words **Book Notices, Colleges, Hospitals, Journals, Obituaries, Personals, Society and Board Proceedings, etc.**

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PATHOLOGY AND ETIOLOGY OF CANCER.*

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There is so much difference of opinion on the pathology of tumors as to render unprofitable a discussion of the pathology, *except* as to certain well-recognized principles that are universally accepted.

We know that cancer is a malignant tumor, composed essentially of abnormal epithelial cells, in contradistinction to sarcoma, which is made up of abnormal connective tissue cells. It is often impossible to tell in what respect a single cancer cell differs from the normal epithelium from which it arises. Difference in appearance of the cell itself, which formerly commanded so much attention, is now believed to be a matter of insignificance, except as to the frequency of the mitotic figures in these cancer cells. The presence of these figures can be understood when it is recalled that the essential feature of all malignant tumors, whether cancerous or sarcomatous is immaturity. It is this rapid growth and consequent immaturity which causes the cell to pass quickly through the various mitotic changes that would normally occur more slowly making it easier to find mitotic figures in rapidly growing cells. The microscopic diagnosis of cancer depends, not upon the individual cell, except so far as the mitotic figures are concerned, but upon the grouping of the cells, and the arrangement of these groups with reference to normal tissue. Cancer cells have been rightly described as epithelial cells in a state of anarchy, knowing no law, governed by no rules, and growing without limitation.

According to Senn, cancer may be classified

*As the subject for General Discussion, and as a part of the Symposium on Cancer, read before the thirty-eighth annual session of Medical Society of Virginia, at Chase City, November 12-15, 1907.

from a histological standpoint as squamous celled, cylindrical celled and glandular cancer.

Squamous-celled Carcinoma.—This variety arises from the skin and from the mucous membrane of the mouth or pharynx. It begins as a small crack covered with a scab. The epithelium grows down, and infiltrates the deep layers of the skin and the subcutaneous tissue, forming a very hard circumscribed mass intimately attached to the skin. This lump soon ulcerates, and the margins of the ulcer are elevated, hard and somewhat everted. The cells are a prototype of the squamous cells of the skin, and grow in continuous columns from the skin. As they multiply rapidly the progeny from one cell forms a group of cells, which fill up the connective tissue spaces and form alveoli. At the center of the alveolus the old cells change their shape from pressure, and undergo hornification—in imitation of the stratum corneum—forming nest-like arrangements, called “pearls.” Squamous-celled cancer usually runs a chronic course. Such growths are often seen about the faces of old men as open scabby sores that have existed without much increase in size for years. This comparatively chronic course is due more to the anatomical condition than to any lack of virulence on the part of the cancer cells, as the deep layers of the skin hold the cells in check. When a squamous-celled cancer arises in a region abundantly supplied with lymphatics, as the lips or mouth, or when it has penetrated deeply and broken the bounds of the deep layers of the skin, rapid growth begins, and the tumor then resembles the glandular variety of cancer. Infection of the lymphatics in squamous-celled cancer is uncommon except in the later stages, for reasons already given.

Glandular Carcinoma.—This variety of cancer resembles acinous glands in structure and in the character of epithelium. It arises from the epithelium of an acinous gland, such as the mammary gland, and rapidly infiltrates

the surrounding tissue, its cells filling up the spaces formerly occupied by acini of the normal gland. It is hard or soft, depending upon the ratio between the cancer-cells and the stroma. When soft and rapidly growing, the cells are abundant, and the connective tissue small in amount; when hard and firm, there are few cancer cells and a large amount of stroma. The former variety is called encephaloid; the latter scirrhus; but they both represent merely different amounts of stroma and cells in a cancer of the same general histological structure. The increase in stroma is sometimes so great as to render it difficult to find any cancer cells, the contraction of the connective tissue having destroyed most of them. The development of such large amounts of connective tissue is probably due to some irritating toxin elaborated by the cancer cells, resulting in an increase of stroma in a similar manner to the formation of excessive tissue in cirrhosis of the liver.

Cylindrical-celled Carcinoma.—This form of cancer derives its epithelial cells from the hypoblast, and is found most frequently arising from the mucous membrane of the stomach and intestines, or from adjacent glands, or from the uterus. It imitates tubular glands, and consists of crypts or of long tubules irregular in size and arrangement. These tubules or crypts are lined with single, or usually with multiple, layers of cylindrical epithelium. The basement membrane is imperfect and permits the cancer cells to invade the adjoining tissue. At some points the cells invade the basement membrane itself. This form of cancer shows early metastasis, and has a special predilection for bone, even where the original growth may be small and comparatively insignificant.

Causes of Cancer.—In considering the causes of cancer, we will first take up those predisposing causes that are generally accepted. Whatever may be the agent that calls the cancer cell into activity, there are certain conditions which are generally recognized as greatly favoring its growth.

Prominent among such indirect causes is *heredity*. Every careful observer has been struck by the influence of heredity in cancer. Instances have been reported where whole families have been destroyed by this disease.

Paget relates a case in which a lady, two of her daughters and eight of her grandchildren died with cancer. Warren records an instance of a cancer of the lip in the father and in one son, with cancer of the breast in two daughters, and cancer of the breast in two grandchildren. We do not know whether the influence of heredity is exerted in lessening the resistance of the normal tissue to cancer cells, as in the case of tuberculosis in regard to the tubercle bacillus, or whether it tends to increase the virulence of the cancer cell.

Traumatism is a potent factor. It has long been noted that cancer is prone to occur at points of irritation. The pyloric end of the stomach, the ileo-cæcal valve and the rectum are all constricted portions of the alimentary canal where irritation and traumatism are greatest, and where cancer is most likely to arise. Occupations that cause constant traumatism of any special portion of the body frequently produce cancer in these regions. Cancer of the lips or tongue in smokers has been noted for many years. The scrotal cancer of the chimney-sweeps of London, due to the irritation of soot in the folds of the scrotum, is well known to English surgeons. W. J. Mayo, Turek and others have shown that cancer of the stomach often follows gastric ulcers. The occurrence of cancer in the scar of burns is another example of the influence of traumatism. Paget and Billroth assert that one-fifth of all cancers can be traced directly to an injury of some kind.

The age of the patient evidently has much to do with the development of cancer. It is rarely found in individuals under thirty years of age, but developing under this age it is exceedingly malignant. The ability of any tissue to resist the attack of a cancer cell will determine that tissue's vitality. When the virulence of the cancer is so great, or the resistance of the tissue so small that the cancer begins to make its appearance before the patient is thirty years of age, the prognosis is always grave. According to Thiersch, the chief reason for the development of cancer in the later years of life is the lack of resistance consequent upon the physiological change of tissue with approaching years. The weakness and loss of elasticity of the stroma and basement membranes and of subcutaneous connective

tissue, which is one of the most marked evidences of approaching age, offer a favorable opportunity for the aggressive epithelial cells to increase and multiply.

The influences of diet, climate and altitude are not clearly established. It is probable that cancer is very rare among the Indians of North America, and among natives of certain portions of Africa, but the statistics to support these claims are not sufficient to justify accurate conclusions. It is thought by some that mental depression, anxiety and worry act as predisposing causes. This is quite likely true, but these causes operate by making the patient prematurely old, so decreasing the resistance of the tissues. The contention of Rokitsansky that tuberculosis and cancer do not occur in the same individual has been disproved by many competent observers.

In considering the *direct causes* of cancer we are met by a multitude of theories. The facts, however, that stand out in all theories of importance seem to emphasize the loss of control by the tissues of the body. Whether this is due solely to local causes, or whether the general inhibitory powers of the body have been awakened, it is difficult to say. It is true, however, that all manifestations of cancer are local at first. The direct cause of cancer is unknown. The unit of a cancerous tumor is the cancer cell, just as the soldier is the unit of an army; but what force impels a cancer cell to cut loose from all laws that govern normal epithelium, and take on such riotous and unlimited growth is a question that yet awaits solution. There is no dearth of theories, but no one theory can be satisfactorily demonstrated, and many of them are more fantastic than logical.

The *theory of Cohnheim* is the most noted one and, with some modifications, probably comes nearer being generally accepted than any other. His claims are based on the well-known embryological facts that the three blastodermic layers represent permanent divisions of tissue. The epiblast and the hypoblast give rise to all epithelial cells, while connective tissue is derived solely from the mesoblast. In the development of the embryo, cells from any one of these layers may become somewhat displaced and, losing connection with their parent layer, they may remain in a latent state until excited

to activity by a predisposing cause, such as traumatism or old age. This theory is rendered more probable by similarity to various physiological processes. The germs of permanent teeth remain dormant for many years. The development of hair at the age of puberty, and the activity of the mammary gland in the female at this period point to the fact that such changes are due to matrices of cells formed during embryonic life and called into activity after years of quiescence. The rapid growth of dermoid cysts from a matrix of cells that has long remained latent is a common observation. It is difficult to believe, however, that such "rests" are placed as numerously over the whole body as would appear from the frequent occurrence of tumors at points subjected to constant trauma or irritation. Then, too, the occasional growth of a cancer from the scar of a burn, where all the original embryonic tissue had been destroyed, indicates that there are at least some instances where the strict application of the Cohnheim theory does not hold. Instances of this kind can be fully explained, however, by somewhat modifying the theory of Cohnheim so that the matrix of cells may be displaced either during embryonic development, or in post-natal life. If parts that are subject to injury require repair, and this repair is done by embryonal cells, it is quite possible that there might be more embryonal cells than are necessary for repair, and that some of these might become displaced, and act as a matrix for future new growths.

Whether a tumor is benign or malignant depends upon the stage at which the matrix of cells was displaced. As has been mentioned before, the most striking characteristic of malignant tumors is immaturity of their cells. If the matrix consists of cells that have been displaced during a very immature period, the resulting tumor will be of immature cells, and consequently malignant. If, however, the matrix has been displaced when the tissue from which it is derived has been well developed or distinctly differentiated, the resulting tumor will consist of more slowly growing and mature cells, and will be benign. In this way, then, with the modification including a matrix of cells of post-natal origin as well as of the embryonic period, the theory of Cohn-

heim accounts for all tumors—both malignant and benign.

Ribbert claims that the origin of malignant tumors is due to a certain cell or group of cells breaking away from the physiological relations of control of the rest of the organism. In this way they may increase without limitation, being dependent upon normal tissue only for their nourishment, but in no way governed or controlled by the rest of the body. When such a cell finds its way into the vessels and lodges at a distant part of the body it develops a tumor by metastasis of the same character as the parent growth. Ribbert's theory has not been widely accepted, and has not the physiological analogies that are present to substantiate the modified theory of Cohnheim.

The theory of nervous disturbance for the origin of tumors is not a new one, nor has it ever received much attention. It was announced by van der Kolk in the middle of the last century. Recent studies of acromegaly in which enlargements of the bone have been found associated with disease of the pituitary body might give some ground for supposing the existence of nervous centers that regulate growth.

The theory of John Beard, of Edinburg University, has recently attracted much attention, partly on account of the therapeutic measures recommended, which are a logical conclusion of his theory of the development of tumors. He assumes (*New York Medical Record*, February 2, 1907,) that in the first divisions of the ovum the cells are not embryonic, that they first form an asexual organism, called the trophoblast. The primitive germ cell, which forms the embryo, arises upon the trophoblast, somewhat as in the case of the larval stage of lower organisms. In all animals there appears what he calls a "critical stage" when the trophoblast disappears through the action of enzymes produced by a primitive pancreas. He cites the well-known fact that trophoblastic cells are, under certain conditions, very destructive, and if allowed to persist in an unchecked form will eat their way through the uterus and destroy the mother's life. This is the chorio-epithelioma of Marchand. In the benign form of chorio-epithelioma, trophoblastic cells are only partially destroyed by the ferments of the pancreas, which are not

sufficient to suppress entirely the cells of the trophoblast, while exercising an inhibitory influence upon them.

According to Beard, benign tumors are pathological manifestations of some portion of the embryo, and consist of normal tissue; whereas malignant tumors arise before the embryo was formed and are products of the trophoblast. Besides these two great classes he recognizes a third, which he calls amphimyxomata, as a combination of both benign and malignant tumors, including elements from both the trophoblast and the embryo. The theory is interesting, but not convincing and the therapeutic test of this theory—the injection of trypsin and amylopsin—has not given satisfactory results in the treatment of cancer.

The parasitical theory of cancer has of late received considerable attention, due largely to successful transplantation of malignant tumors in mice and in dogs. Interest has centered about certain bodies which have been seen within the cancer cell. They were described in 1847 by Virchow who thought them a product of degeneration. In 1889, Thoma wrote of these bodies and believed they were protozoa. From that date down to the present time numerous observers have noted and studied these bodies, among them Steinhaus, Borrel, Foa, Ruffer, Plimmer, Bose, Gaylord, Posner, Apolant, Embden, and Calkins. They have become known as "Plimmer's Bodies." They are small, highly refractive, and spherical, with a delicate limiting membrane. There is no direct proof that these bodies are parasites, although many observers believe that they are. Perhaps the best argument in favor of their being parasites is their similarity in appearance to a known organism—*Plasmodiophora brassicæ*—and the fact that in many respects they resemble some forms of the small-pox parasite.

Various other organisms have been described as the cause of cancer. Many of them have been proven to be harmless saphrophytes due to accidental contamination. Others have been shown to be yeast organisms, or blastomycetes, which have been described by San Felice and others as occurring in cancer.

Kelling, of Dresden, advanced the theory that cancer was often due to implantation of

embryonal cells from other animals, particularly from raw eggs. Having a foreign origin these cells would not establish physiological relation with the host, but would grow independently and act as parasites. He claimed that the administration of raw eggs in ulcer of the stomach was likely to produce cancer by the implantation of embryonal cells from the raw egg on the surface of the ulcer. Kelling's experiments to establish his theory have been entirely disproved by many observers, such as Ribbert, Fudd and others.

Gaylord claims that in the disappearance of cancer, following the application of the X-ray, the cell does not degenerate until a late stage; that apparently some agent that causes the malignant cell is destroyed first, and later the cell disappears.

Many laboratories have successfully transplanted both cancers and sarcomas in lower animals. Some of these tumors, notably one of Ehrlich No. 7, has been so virulent that there have been 100 per cent. successful implantations from this growth in a long series of experiments. Beebe, of New York (*Journal A. M. A.*, November 2, 1907), gives an interesting account of transplantation experiments in lympho-sarcoma of dogs. His experiments along this line seem to disprove one of the strong contentions of the pathologists in favor of the parasitical theory, for he says that thin slices of the sarcoma transplanted in a dog do not degenerate entirely, as has been claimed, but degenerate merely through the center, while the cells along the edges of the transplanted tumor begin to grow at once. One of the most striking experiments is that reported by Ehrlich and Apolant (*Berlin Wochen.*, 1905, No. 28, and 1906, No. 2). These observers have noted three times that the transplanted carcinoma in mice would eventually loose more and more of the epithelium, and gain more connective tissue, which was young and very cellular, until after several generations a typical polymorphous sarcoma would develop. This fact is a very strong argument for the presence of some parasite or microbe that has the power of converting epithelial cells into cancer, and of gradually transferring its influence to connective tissue, producing a sarcoma. Recently, Gaylord (*Medical Record*, February 2, 1907), has reported the observa-

tion of a spirochete, somewhat similar in appearance to the spirochete pallida of syphilis. He has observed it in many of the experimentally produced tumors. He says these microbes occur most plentifully in the actively growing portions of a tumor, and are usually found in an epithelial cell surrounded by small vacuoles. They are now apparently constant in three strains of transplanted tumors. This spirochete has not been isolated, and, of course, its etiological relation to cancer is a mere matter of surmise at present.

In spite of these fascinating experiments of transplantation, it is difficult to believe in the parasitical theory of cancer with the present knowledge before us. The mere fact that a tumor is transplanted is by no means a conclusive argument in favor of the parasite. Epithelial tissue as skin-grafts can be transplanted from one part of a person to another, or from one individual to another individual and made to grow. Before any of the modern experiments in transplantation of tumors, the knowledge of metastases in the human body had been fairly well worked out. It is true that some toxin formed by the growth of cancer cells has an irritating and destructive effect upon the animal organism, but it does not necessarily follow that the toxin must be of bacterial origin. It may be a product of the cancer cell, just as deranged epithelial cells in the thyroid may give off a poisonous toxin. We know that constant irritation of any kind predisposes to cancer, and that the more rapidly growing the cancer the greater the amount of toxin. It is entirely probable that the pronounced irritation of toxin from a virulent and rapidly growing cancer may act upon the connective tissue and cause a sarcoma, as in the experiment of Ehrlich, purely as a result of irritation and injury from the toxin.

Finally, if cancer is due to parasites it is a question whether there is one kind of parasite or many; whether, for instance, the same microbe that produces cancer will also cause sarcoma. If this be true, it is evident that every malignant tumor would be a mixed tumor, for any parasite that would attack epithelium must also come in contact with connective tissue, and, as the tumor extends, various other tissues would be acted upon by this organism. In a cancer of the lip, for

instance, both the epithelial and connective tissue elements would be affected, as well as the muscle, and when the bone was reached, a sarcoma of the bone would be produced. If, on the contrary, there are different organisms which cause malignant growths, we would be compelled to imagine an almost endless number of them, causing not only the many varieties of malignant tumors, but attacking different kinds of tissue as well.

303 West Grace Street.

THE DIFFERENTIAL DIAGNOSIS OF ECTOPIC PREGNANCY.*

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Recent experience with a somewhat large group of unusual and interesting cases, in which ectopic pregnancy was either suggested or strongly indicated, and which proved in some instances to be, and others not to be, ectopic pregnancy, have served to direct my attention to the subject of this paper. I have also been impressed with the fact that general practitioners do not seem to be on the lookout for this condition as actively as they are for other of the more modern (?) abdominal lesions. No patient can have a pain in the abdomen or vomiting without having it at least suggested that the attack is one of appendicitis, while ectopic pregnancy seems to have passed into a period of neglected old age. It is, however, as live a question to-day as it has ever been, and there are doubtless more cases occurring now than ever before.

It is not my purpose at this time to enter exhaustively into the discussion of the various signs and symptoms, which may be found in any good text-book, but to direct attention particularly to some of the points brought out in recent experiences, and especially to the fact that ectopic pregnancy is of quite frequent occurrence.

In my own experience, the most frequent mistake which I have encountered has been that the case has been mistaken for an ordinary abortion, and has been referred for a curettement. In most of these cases the signs and symptoms have been quite adequate to permit

of an exact diagnosis previous to operation, had the attendant once thought of the possibility of ectopic pregnancy. The reason for this is not far to seek. Abortions are of such frequent occurrence that, when the patient gives the ordinary symptoms of pregnancy, and is then seized with pain, flooding and the expulsion of clots or membranes, the symptoms are no further analyzed, and the case is diagnosed as abortion. I find that Hirst, of Philadelphia, has had the same experience, and he states that in seventy-four cases treated by him, twenty, or over one-fourth, had been diagnosed by the attendant as simple abortions. While I have not the statistics at hand, I am inclined to believe that the proportion with me has been even greater. A most unusual case was recently related to me by an esteemed colleague.

A young woman discovered that she was in the early months of pregnancy, and attempted to induce an abortion by the use of some article appertaining to the female toilette—possibly a hat pin. Her efforts were followed by a flow of blood and severe pains, and she considered that her purpose had been accomplished. As, however, the flow continued to an alarming extent, and she realized that she had become quite ill, she called in my friend, who, on making a careful examination detected a mass in her pelvis, which, on operation, proved to be a ruptured ectopic pregnancy.

So frequently is ectopic pregnancy mistaken for an early abortion that I would advise that every case of abortion be subjected to a careful and painstaking bimanual examination as the only method of preventing embarrassing and perhaps fatal mistakes. Unfortunately, the ability to make an accurate bimanual examination can only be acquired by diligent and persistent practice; and in the event that the attendant does not possess sufficient experience in this line of work to give him the necessary confidence in his findings, it becomes his duty to call in some one who can give him the information he desires.

It is important to note that a serious rupture may occur, and objective symptoms may be entirely absent. In such cases we have to place our entire reliance on the subjective symptoms and history of the case; and it is well to note at this point that these are most frequently sufficiently clear to indicate quite exactly the

*Read before the thirty-eighth annual session of Medical Society of Virginia, at Chase City, November 12-15, 1907.

nature of the complaint, and are of most value in arriving at a diagnosis. A case which well illustrates this point occurred in my practice some years ago.

A patient who had been many years married, and who had had no children, missed one period, and was later taken with cramping pains and irregular bleeding from the uterus. I suggested an examination, suspecting an ectopic, but, owing to muscular contraction and rigidity, I was unable to make out anything further than an ante-flexed uterus. I suggested examination under an anæsthetic, but before I could arrange to do this she was taken suddenly during the night with severe colicky pain, fainting spells and a free discharge of blood from the uterus; and, owing to the fact that I could not be secured promptly, another physician was called, who diagnosed the case as one of appendicitis. I was summoned again in the morning, and having previously suspected an ectopic, I had the patient transferred at once to the hospital. By the time of her arrival she had ceased to have pain, her color was near normal, as were her pulse and temperature, and she expressed herself as being quite comfortable. Her condition was so good that operation was deferred until the next day, when she was prepared and anæsthetized, and, before operation, was subjected to a most careful examination both by myself and my senior associate, with what was to me—just commencing my career—a most embarrassing result—namely, an absolutely negative finding, with the exception of a fullness in the vault of the vagina and a sense of resistance in the abdomen. In view of the typical history and subjective symptoms, which were practically all present in this case, the operation was done notwithstanding, with the result that the abdomen was found half full of blood and the products of conception expelled completely from a ruptured tube, leaving it flaccid and scarcely palpable. This served to impress on me the importance and diagnostic value of the history and subjective symptoms, which I have learned to esteem as still more valuable with an increased experience.

Temperature is of little value in estimating the nature of the condition. While it is true that sudden and severe hemorrhage most frequently is accompanied by subnormal temper-

ature, it is possible for the temperature to be elevated under such conditions, and many cases have been reported in which the temperature has been quite high. I recall a case in which a patient died of intra-abdominal hemorrhage, in which the temperature arose to 105 degrees F. If the patient survives the first shock, there will almost invariably be an elevation of temperature, due to absorption of blood from the peritoneum. It is well to remember this point, as we are so accustomed to associate temperature with inflammation, that the true nature of the process may be mistaken. Per contra, when inflammation is due to an unmixed gonorrheal infection, the temperature is often normal, or very near normal.

Acute gonorrheal salpingitis frequently simulates ectopic pregnancy very closely, and a complete differential diagnosis is sometimes impossible. A recent case is quite typical.

The patient was the mother of several children. Her last period had occurred about two weeks previous to her attack, and had lasted only a day, checking quite suddenly. Her attack began with a sudden and severe pain in her left side, which later involved the right side, and became more severe at that point. She was examined by a physician, and following that, she began to flow very freely, and when she attempted to stand on her feet, she would become dizzy and faint. Her temperature was about normal and her pulse 120. When seen, a mass could be felt in the right lower abdomen, seeming to arise from the pelvis, and there was no abnormal rigidity. She appeared to be almost exsanguinated. A bimanual examination detected a large mass on the right side of the uterus, extending behind into Douglas' cul-de-sac and upward several fingers' breadths above the pubes. It was boggy and not clearly definable. A significant point was the finding of a smaller mass on the left side, having the feel and shape of an inflamed tube. This latter, together with the history of pain commencing on the left side, created a suspicion that the case might be one of gonorrheal infection, but the right side presented a picture which could readily be interpreted as a ruptured tube, with partial organization of blood clots. Operation, which was promptly performed, revealed a double gonorrheal salpingitis, with extreme matting of intestines and

several pus pockets. Removal of tubes was followed by an uneventful recovery, with relief of all symptoms. Another case had missed two periods, and was taken with sharp, severe pain in right side and an irregular flow of blood. There was no elevation of temperature, and a sausage mass could be made out on the side of the uterus. There was a slight involvement of the tube on the left side. Operation removed two gonorrhœal pus tubes, with complete recovery.

Tumors, especially of the ovary, may, under certain circumstances, present symptoms and findings of ectopic pregnancy. A recent case was brought for curettement. She had been taken suddenly with a profuse bleeding from the uterus, and, although she had missed no periods and no membranes had been passed, it was suggested that the case might be one of incomplete abortion. Examination revealed an ovoid mass on the left side, slightly movable, about the size of a lemon. She gave a history of having had a similar attack three years previous, not so severe. On operation, a thick-walled cyst of the left ovary, containing chocolate-colored fluid and encircled by an inflamed tube, was removed, with entire cessation of symptoms.

A recent case of chronic pelvic inflammation presented almost typical symptoms of ectopic. There had been a long period of sterility previous to an absence of three periods. She commenced to suffer with cramping pains in abdomen and an irregular flow of blood. There had been no symptoms of pregnancy except missing the periods. Examination revealed a hard, firmly-fixed mass in pelvis, size of an orange, in which the uterus was incorporated. Operation with removal of appendages and uterus was followed by complete relief of symptoms.

From the foregoing, it will be seen that many conditions simulate ectopic pregnancy very closely, both in clinical symptoms and physical findings. It is true that error in diagnosis may not be of vital importance, because such conditions usually require operative interference, but this does not take away our obligation to diagnose our cases properly before entering upon treatment. But even with the greatest care, an absolute diagnosis must at times be impossible. There are, however, cer-

tain signs and symptoms which must be met before diagnosis of ectopic pregnancy can be certainly made, and, in the absence of these, the condition is apt to be something else.

An opportunity is not often given to diagnose a case previous to rupture on account of the fact that the symptoms presented are not of sufficient urgency to the patient to induce her to seek medical advice. In such cases a history of one or more missed periods, cramping pains in the affected side and an enlarged tube *on one side only*, increased pulsation in the uterine artery of that side and a slightly softened and enlarged uterus are sufficient to make a diagnosis. Gonorrhœal pyo-salpinx may present practically the identical symptoms, but a differentiation can be made by the fact that gonorrhœa almost invariably affects both tubes, which can be made out by careful examination. Diagnosis at the time of rupture or immediately after is most certainly made by the subjective symptoms, and the objective may be entirely indistinguishable. The important points are a miss of one or more periods, which symptoms may, however, be absent, slight flow occurring at irregular intervals, but above all, the sudden, sharp and frequently agonizing pain in the abdomen, coming on suddenly, attended by fainting or faintness, and a flow of blood from the genitals. Such a history can mean but one thing. Other conditions may occur suddenly, but are not attended by faint. The physical findings may or may not be definite. Where there is much extravasation of blood, the only physical sign that can be made out is a fullness in the vault of the vagina, and possibly flatness on percussing over the lower abdomen or flanks, if extravasation has been great.

In cases that are seen some time after the rupture, the history is of great importance, as the physical findings resemble so closely other conditions, notably gonorrhœal inflammation, that it is extremely difficult to differentiate. The principal diagnostic point is that gonorrhœal inflammation almost invariably affects both tubes. A point to be constantly borne in mind is the close resemblance between ectopic and an abortion, and no case of abortion should be treated without making a complete and thorough bimanual examination.

8 West Grace Street.

AMOEBC DYSENTERY IN THE SOUTHERN STATES.*

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It is not intended in the present paper to give in detail the history of this important group of infections, but to show that it is important, especially to men working in the territory covered by the members of this Association, and to point out as simply as possible the means for its recognition, its prophylaxis, and treatment.

If you will turn to the mortality lists published by the State Boards of Health, the U. S. Public Health and Marine Hospital Service, the U. S. Census, and the public hospitals of the Southern States, you will hardly find amœbic dysentery or amœbic abscess mentioned in one instance; and yet, as I shall point out to you from the figures compiled in our hospital, these infections are surely endemic throughout our section, and especially in the Coast and Gulf regions.

In 1903, Fitcher published a study of 119 cases from the records of the Johns Hopkins Hospital from its beginning in 1889. Since 1903 I have collected sixty-three additional cases from the same records, making a total of 182 cases. The geographical distribution of these is striking, and I submit it herewith.

State.	First Series.	Second Series.	Total.
Maryland	95	28	123
District of Columbia.....	2	1	3
Virginia	8	6	14
West Virginia.....	1	7	8
North Carolina.....	1	4	5
Tennessee	1	..	1
South Carolina.....	..	3	3
Georgia	1	3	4
Florida	2	..	2
Alabama	1	3	4
Texas	1	1	2
West Indies.....	1	2	3
Philippine Islands.....	..	2	2
Brazil	1	..	1
Turkey .....	..	1	1
Doubtful	4	2	6
	119	63	182

Decades.	First Series.	Second Series.	Total.
First	11	3	14
Second	8	4	12
Third	35	19	54
Fourth	29	15	44
Fifth	20	12	32
Sixth	11	6	17
Seventh	4	4	8
Eighth	1	..	1
	119	63	182

Sex.	First Series.	Second Series.	Total.
Males	108	63	171
Females	11	..	11
	119	63	182

Race.	First Series.	Second Series.	Total.
White	107	56	163
Black	12	7	19
	119	63	182

It is evident that the great majority of our cases come from the State of Maryland, as is natural in a hospital primarily serving the poor of the city of Baltimore; but you will note that from our moderate general Southern patronage there is hardly a State that has not furnished some cases of amœbic infection.

If, then, the small portion of patients from these States drifting north for treatment shows a constant and increasing proportion of amœbic cases, the actual number in these States must be very considerable; and we do, in fact, find here and there in the literature reports of cases from various of our Southern States, as those of Harris, from Georgia; Dock, from Texas; Wilson, from Alabama, and others. But apart from these isolated reports, the profession in general seems to pay little attention to the prevalence of this infection. And even in large general hospitals there is usually no recognition of this disease as a separate clinical entity.

In Louisiana, for instance, I have found reported for two New Orleans' hospitals in the years 1901-1906, 166 cases of "liver abscess," and 136 cases of "chronic dysentery." Now, the pathological records of the world will show that apart from amœbic infection, abscess of the liver is a rare disease; yet we have here in one city 166 cases in six years. It is a justifiable inference, amounting to certainty, that a very large majority of those cases were due to amœbic infection.

In the same way, an examination of the more meager records from Virginia and the Carolinas, southward to Florida, and westward to Texas, shows everywhere figuring in the vital statistics, "chronic dysentery" and "liver abscess."

By a further examination of the tables, we see at a glance that the infection has certain selective characteristics. It is overwhelmingly preponderant in males (171 to 11 in our series); the white people are much more affected than the black (163 to 19); and 60 per cent. of the cases occur in the third and fourth decades of life. As to occupation, the number is fairly evenly distributed between the outdoor workers and the sedentary.

Of our 182 cases, 37, or 20.3 per cent. have

*Read by invitation at meeting of Tri-State Medical Association, Charlotte, N. C., February 18, 1908.

had abscess of the liver as a complication.

The statistical resume, just preceding, is my strongest plea for your interest in what remains to be said about the cause, the progress, and the treatment of amoebic infections. From it, I think you must admit that the question deserves the earnest attention of every physician and surgeon in the Southern States.

Without entering fully into the historical and controversial sides of the subject, it is sufficient to say that amoebic infections are due to very low forms of animal life belonging to the great division Protozoa, and the class Rhizopoda. The sub-order of *Amœba* contains very many species, living in various conditions, a few of which are parasitic in man and animals. *Amœbæ* have been known to occur in the human intestines from the middle of the 19th Century, but for a long time no pathogenic significance was attached to their presence. Lambl noted the presence of *amœbæ* in enteritis in 1859, and in 1875 Losch first carefully described the organisms in the human feces and gave the name *amoeba coli*.

In 1886, Kartuli's exhaustive investigation of Egyptian dysentery first established the constant association of these parasites with the lesions of dysentery.

In America, Osler (1890) and Councilman and Lafleur (1891), made the first study of the occurrence and nature of amoebic dysentery, and the last named observers distinguished pathogenic and non-pathogenic, calling the former "*amœba dysenteriae*." From this time to the present, numberless researches have been directed to the study of these organisms and their relation to dysentery. They have been cultivated on artificial media and certain phases of their life history determined. Certain forms have been shown to produce typical lesions in cats and monkeys when fed to them.

Out of the confusion of terms used by different observers, Schaudinn has brought order by classifying the two forms common in man as *entamoeba histolytica*, which is that associated with dysentery, and *entamoeba coli*, which is generally believed to be harmless. These names are rapidly being adopted in the literature, though some prefer *entamoeba dysenteriae* for the pathogenic form, and others make no distinction, but call all the intestinal *amœbæ*,

amœba coli. In what follows we shall adhere to Schaudinn's classification.

The two forms are readily differentiated under the microscope by certain general characteristics, the most important being given below:

ENTAMOEBA COLI—NON-PATHOGENIC.
Smaller, 10-20 microns. Sluggish motility, soon quiescent. Grayish, homogeneous, finely granular. No sharp distinction of ectoplasm and entoplasm. Nucleus always distinct. Vacuoles not common, never more than one; cell inclusions (R. B. cells, bacteria, etc.) not plentiful. Reproduction by 8 spores.

ENTAMOEBA HISTOLYTICA—PATHOGENIC.
Larger, 25-35 microns, greenish. Very active motility, often persisting for hours. Ectoplasm clear, hyaline and sharply differentiated from the coarsely granular entoplasm, nucleus obscured by cell inclusions, vacuoles, etc., and rarely seen. Reproduction by budding.

Entamoeba coli is widely distributed over the earth, and is present in the intestines of many normal persons, as shown by Craig and others in the Philippines, and in the United States, being often found after the administration of a saline purge. It is easily recognized by its microscopic characteristics. It loses its motility very soon after the stool is voided, even though the temperature is carefully maintained.

In dysentery cases the *entamoeba histolytica* is found in the bloody mucus, or shreds of necrotic tissue from the ulcers, and also in the fluid portions of the stool in the more chronic cases.

In a temperate climate the stool should be kept warm and examined as soon as possible after voiding. Or a rectal tube may be passed and the little masses of mucus collected from the tip and examined immediately.

In the milder cases, which are the predominant type with us in the United States, there is nothing very characteristic about the onset of the disease. It may begin suddenly with acute diarrhoea, the stools becoming frequent, often 15 to 20 in twenty-four hours, and composed principally of glairy mucus with more or less blood. In other cases the stools may be merely watery with considerable fecal matter and flecks of blood-stained mucus.

In contrast to the bacillary dysentery, there is ordinarily less tenesmus, as the rectum is not commonly a seat of infection. With the acute stage, there is often slight fever with general lassitude and loss of appetite. While in severe cases, with gangreen of the bowel, the progress of the disease may be rapid and the case terminate fatally in two weeks or less; the general tendency in the milder cases is toward a chronic

course with alternating diarrhœa and constipation. The patient loses weight and is more or less anæmic; the strength is diminished, and frequent attacks of diarrhœa or dysentery occur, with or without dietary indiscretion or special exposure. In the milder cases, there is little to be made out on physical examination. Ordinarily there is tenderness over the colon, especially about the cæcum. It is to be remembered, however, that amœbic infection may produce so few intestinal symptoms as to be disregarded by the patient, and only be recalled to memory when some serious complication leads him to seek medical advice.

The most important complication is hepatic abscess. This occurs in a large percentage of cases, 20 per cent. in our series, and is associated with a high mortality. It may develop early in an acute case, or appear after the lapse of weeks, months, or even several years.

The most probable route of the infection is through the portal circulation. The abscesses may be solitary or multiple, and often reach a very large size. The commonest seat is the upper and posterior portion of the right lobe. The development of abscess is usually associated with localizing pain and tenderness in the hepatic and epigastric region, radiating toward the back and right shoulder. The hepatic dullness is commonly increased, particularly the upper border behind, and there is sometimes very definite bulging of the intercostal spaces. The outline of the liver should be frequently percussed during the course of the dysentery, as this may give us the first evidence of abscess formation. With the development of abscess, there is often a rise in temperature, showing intermissions and a moderate leucocytosis. Exploratory puncture with a long needle will help to confirm the diagnosis.

Immediate operation and drainage of the abscess offers the best chance of recovery. The abscess may rupture into the peritoneal cavity, the portal vein, through the diaphragm into the lung, or externally.

The pus of the abscess is generally sterile and the amœbæ are found in large numbers near the abscess wall. Other serious complications are perforation of the gut with subsequent peritonitis (local or general), and severe hæmorrhage, which may be suddenly fatal.

The sequelæ are principally dependent upon

the extensive changes in the intestinal wall due to the ulceration and œdema, resulting, in severe cases, in cicatrization and atrophy with partial or entire loss of functions of the colon. Chronic enteritis and functional disturbances of the stomach are also common.

The *diagnosis* of amœbic infections during life depends absolutely on the demonstration of *living motile* amœbæ in the stools or pus from the abscess. It is, therefore, essentially microscopic. Attempts made to differentiate the cases symptomatically without the microscope are open to many sources of error.

Strong and Musgrave have shown in their wide experience with the disease in Manila that if the cases are treated early the percentage of abscess is much reduced. Therefore, it cannot be too strongly urged that cases of dysentery should be carefully and repeatedly examined for the presence of amœbæ in order that an early diagnosis may be reached and vigorous treatment instituted.

Treatment.—During the acute stage, the primary requisites are rest in bed, very limited liquid diet, first albumen water, then rice gruel, with gradual addition of milk, and withholding all solids until the stools are formed. Morphine is invaluable in controlling the very frequent stools and pain. Purging is contra-indicated during the acute stage.

With the subsidence of the acute symptoms, local treatment should be instituted. This is the only efficacious medication in the light of the widest experience. The whole colon is thoroughly irrigated with solutions of quinine, beginning at 1-5000 and increasing in strength to 1-500 in a few days. The patient's hips are well elevated and a long, soft rectal tube is introduced three or four feet into the large bowel. Then a quart or more of the blood-warm solution is allowed to flow slowly in and is retained for fifteen to twenty minutes, if possible. It is better to leave the tube in place during this time. If the rectum is the seat of ulcers and very sensitive, it may be necessary to give a morphine or cocaine suppository or an injection of starch and opium before passing the tube.

Other irrigation fluids recommended are silver nitrate, 25 to 40 grains per quart, bichloride of mercury, 1 to 3000, hydrogen peroxide, one-half per cent. solution. But those of most experience give the quinine the preference. These

injections should be kept up long after the stools are solid and until after repeated examination with rectal tube, and following saline purges no amœbæ are found.

Recently several authorities have recommended cœcostomy or appendicostomy in chronic cases, with irrigation of the bowel from above. This has apparently given excellent results in a number of obstinate chronic cases in our series which had not responded to the rectal irrigations.

With the treatment by a diet of turnip tops, or poke berry leaves (*phytolacca*) as advocated by Wilson and Pressly, of Birmingham, we have had no good results. Early diagnosis and prompt operation offers the only hope of cure in the abscess cases, though in some instances the hepato-pulmonary abscesses have been reported to heal spontaneously.

Prophylaxis.—The experience in the tropics has demonstrated that water is the most common carrier of the infection, and it is here that we must guard against infection by boiling the water used for drinking and preparing food. It has been shown also that lettuce, celery, and other green vegetables and fruits may be a source of danger.

Musgrave has shown that the resting stage of the amœba can resist long drying and even freezing, so that sterilization by heat or adequate filtration are necessary wherever the infection is endemic.

Some of the more important works on amœbic dysentery are cited below for such as may be interested.

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THE DUTY OF THE PHYSICIAN TO HIS OBSTETRICAL PATIENTS.*

By O. P. SCHAUB, M. D. Roxboro, N. C.

It is not my purpose in the discussion of this paper to introduce any theoretical facts pertaining to the subject, but only to present a few

practical points that I have gathered through personal observation.

So much has been said and written of late years concerning *duty* in all its relations, it is feared, through common usage, to have lost its true significance; but perhaps to no profession or individual does it disclose its real identity as to the physician; to him it is ever present, demanding time, constant attention and faithful application. Particularly is this true in obstetrics. From the time the physician is engaged until he discharges the case, his duty becomes a serious and sacred one.

It is presumed, and is absolutely necessary, that the physician be thoroughly informed in regard to his subject in all its phases, remembering that "knowledge is power," and the only true guide to action. Not only should he be familiar with physiological pregnancy, so that he may be able to give intelligent instructions to the patient regarding temperate habits, loose clothing and daily exercise, but he should be prepared to overcome any pathological conditions that may come under his observation.

Owing to a prevailing custom, the great majority of pregnant women remain indoors too closely, often to the detriment of their health and that of the child. We not only deplore this, but denounce it as a foolish practice and exaggerated modesty.

It behooves men as well as women to look upon this condition of woman as only one of Nature's laws, divinely planned, and, by a respectful manner and considerate air, help to keep the dignity of motherhood sacred and pure.

It is our belief that our women in towns and cities could learn a valuable lesson from their country sisters in regard to their manner of living during pregnancy. The latter, that is, the generality of them, do their house work and quite frequently attend to the needs of a large family. This necessitates exercise more or less of the entire body, promotes a development of muscular strength, and suggests a healthy occupation of the mind; consequently, they usually have few complications and bear strong, healthy children; while a lady isolated from her social duties has only to think of her condition, and probably magnify the dangers attendant, until she is a nervous image walking on the edge of nervous prostration awaiting the trying ordeal.

Some years ago the question of race degen-

*Read before the Tri-State Medical Association of the Carolinas and Virginia, Charlotte, N. C., February, 1908.

eration and its causes was greatly agitated. Many theories were advanced, various comparisons made and numerous remedies suggested; but none appealed to me so forcibly as a remark of an old lady rich in experience and in the possession of nine healthy boys. She said: "The trouble with the women these days is too little healthy work, and too much horrid worry; you doctors should prescribe less medicine and more sunshine and simple living." When we remember that she was speaking from her own experience, which no doubt would be corroborated by many of our grandmothers, and when we call to mind the experience of those who bore their children alone, estranged even from their husbands by the custom of their country, we are strongly inclined to agree with our friend and accept her advice, notwithstanding the deleterious effect it might have on our purses.

As has been said, the physician, to a certain extent, is an honorary member of every family he attends, and, being cognizant of this distinction, he should endeavor to inspire his patient with confidence, so that he may become thoroughly acquainted with her condition and be able to forestall as much as possible any unfortunate sequel and to lessen the strain requisite to labor.

When the patient places herself under the care of a physician, she gives him a responsible duty to perform; therefore, it is eminently proper that he should instruct her in regard to conception in cases in which the reproduction of a healthy living child is quite impossible; if possible, it would mean the sacrifice of the mother's life or at least her health.

Some of these indications are syphilis, tuberculosis, insanity, epilepsy and their general condition in the mother which would be aggravated to such an extent that her death would be determined, or any cause greatly accelerated.

In the case of a woman who furnishes any indication just named, it is the imperative duty of the physician to inform the patient and her husband of all the consequences of impregnation under the circumstances, and if the matter is left with him to decide, he should insist that conception shall not occur.

The physician should familiarize himself with the subject of asepsis and pelvimetry, the mechanism of labor and moulding of the fetal

skull in vertex, bregma, brow, face and pelvic presentations.

If the patient is in good condition at time of labor, it is not unwise for the physician to prepare himself for any emergency; perhaps the labor is a long and tedious one, and is making no progress, the patient is also losing strength. In this instance it is expedient to call an assistant, administer chloroform and apply forceps.

Should the patient be tubercular or diabetic, after having made frequent urinary examinations during pregnancy, which, by the way, is advisable in all cases, and should her vitality become lowered, and verging on a state of collapse, again we advise chloroform and forceps delivery.

After the birth of the child, diligent search should be made for lacerations and other injuries that would retard a perfect recovery of the mother.

The physician should remember that his duty does not terminate, as soon as the patient is delivered, for in almost every case he should lay down rules and regulations to prevent sequels and maladies, such as sore nipples, mastitis, retention of urine, constipation, and sepsis in its various forms.

Whenever it is practicable, the physician should advise a trained nurse, particularly if there should be complications or the child a delicate one.

We have often felt the need of efficient service, especially in the country, where usually some "granny" is employed. Generally she is too ignorant of sanitation to carry out instructions, and too superstitious to give a baby but a thimbleful of water "because" one old granny remarked in my hearing, "when he cuts his teeth, he won't slobber but dat much."

This same paragon of knowledge, in her own estimation, was seen surreptitiously mopping the baby's mouth with wet diaper. When reprimanded, she replied with a very superior air that it would keep him from having the "thresh."

Lastly, the physician should instruct the mother concerning the formation of the child's habits; he should be taught a respectful obedience to Nature's laws and the proper use of his bodily functions.

As we look to the coming generation to real-

ize the ideals we have missed, the standards not yet attained, it becomes our duty to teach them the importance of clean, healthy bodies to aid them in establishing clean, healthy morals.

THE URETER—SOME CONSIDERATIONS.*

By ROBERT C. BRYAN, M. D., Richmond, Va.

The great anatomical and physiological role which the ureter plays has never received the support and advertisement which it deserves. It is analogous to the intestine, in that it is a musculo-membranous tube designed to throw off waste products of the body, possesses inherent power of mobility, is not under control of the will, has a most generous arterial, venous and nervous supply, communicates indirectly with the outer world, and, therefore, is liable at times to bad infections, lies retro-peritoneally, and is intimately anatomically associated with some of the other abdominal viscera, and further, is constantly undergoing its physiologic activity. But it is unlike the intestinal canal, in that it is vertical throughout the greater part of its extent, its mesentery is linear and not enveloping, its absorptive powers are limited in the normal state, contains no bacteria, elaborates no products destined to aid metabolism, and finally, is not used as a means for nourishment to the body.

In the time allowed us, it is impossible to take up all the aspects of the ureter. The writer will, therefore, bring to your attention some of the more important surgical and anatomical views which he has been able to collect from the few contributions to ureteral history, and recount a very limited number of personal cases.

Gray gives the length of the ureter as 16 inches, and the diameter that of a goose quill. Cunningham says the ureter is a pale-colored, thick-walled duct, with small lumen, about 10 inches long, the abdominal portion 5 or 5½, the pelvic 4 to 4½ inches in length. Morris states that the ureter is a fifth of an inch in diameter, and about 12 inches in length, the right being slightly shorter than the left. Piersol describes the ureter as 10½ inches long, 4 or 5 mm. in diameter. Sobotta and McMurrich put the ureter's

length at 11½ inches. This seemingly great inaccuracy in the actual length of the ureter may be, in a measure, explained by the anatomical uncertainty of just where the pelvis ends and the ureter begins. The shape, elongation of the renal pelvis, sex, age, height, mensuration after removal (for the ureter is elastic and may stretch considerably), all influence the accuracy of the measurement. At any rate, it does not seem that six inches difference, even under the above conditions, could be permissibly recorded.

The ureter lies behind the parietal peritoneum, loosely buried in the subserous fat and fascia, whose transverse fibres act as a supporting lattice work upon which the ureter is trailed, thus tending to hold the two severed ends together.

Starting as the abdominal portion at about the lower level of the first lumbar vertebra, it drops vertically downwards upon the psoas muscle to the sacro-iliac articulation. Both the right and left ureters cross the genito-crural nerve obliquely, and are crossed at an acute angle lower down by the spermatic or ovarian vessels. They are also crossed above, on the right side, by the duodenal flexure, and on the left, by the pancreas and sigmoid flexure of the large intestine. The right ureter has, to its inner side, the inferior vena cava, and the left, to its inner border, the abdominal aorta.

The distance between the two ureters at their upper ends is about 3½ inches, and at the pelvic brim 2½ inches. At the point of crossing over the iliac artery, the ureter begins its pelvic course and is about 4½ to 5 inches in length. In the male, the ureter passes downward, backward and slightly outward on the sides of the pelvic wall, imbedded in the subperitoneal tissue as far as the level of the ischial spine (close to the deepest part of the great sarco-sciatic notch); at this point it bends inward and, running anteriorly above the pelvic fascia, penetrates the musculature of the bladder, so that at its mouth it is about one inch distant from its fellow of the opposite side. In its descent, it crosses the internal iliac artery, the obliterated hypogastric and the obturator vessels and nerves. A little further on, it is crossed by the vas deferens to its inner

*Read before the Tri-State Medical Association of the Carolinas and Virginia, during its session at Charlotte, N. C., February, 1908.

side, and soon comes into relation with the ampulla of the seminal vesicles.

Most authorities claim that the ureter loses only its fascial coat on penetrating the bladder; that it runs for about three-quarters of an inch as a complete tube through this muscular wall before gaining its mouth in the vesicle cavity, and that there is no association or intermingling of the ureteral and vesical musculature. More recent and satisfactory dissections have substantially shown that there is an intimate interdigitation of the muscular bundles, which are piled up, reduplicated and closely interwoven about the ureteral orifice, so closely intermingled that on distention of the bladder, the ureteral mouth is doubled back, invaginated, and acts as a tight sphincter or plug to the regurgitation of fluids.

The ureter, aside of its proper walls, receives a sheath from the extra-peritoneal fascia. This sheath, which has been already referred to as a lattice work, is poorly defined in the *pars abdominalis*, but becomes distinct and well marked in the *pars pelvina*; stopping abruptly at the point of entrance of the ureter into the bladder, it mingles there with the sub-peritoneal fascial envelope which surrounds the urinary bladder.

The arterial supply of the ureter may be traced out from the suprarenal body above to the bladder and rectum below, and consists of the following well-defined primary trunks, aside from vagrant subperitoneal branches given off throughout its course—the suprarenal, renal, the ovarian or spermatic, the internal iliac through the *arteria ureterica*, the median sacral, the superior, middle and inferior vesicles, the vaginal, uterine, middle and inferior hemorrhoidals. This pronounced vascular generosity explains the marked tolerance of the ureter to impacted stones and its resistance to infection. Leonard has shown that the smaller calculi may remain impacted for life in the ureter causing no disintegration or necrosis. These vessels form the peri-ureteral arterial plexus to the ureter, and are found in its loose peri-muscular sheath. From these paralleling trunks frequent and intimate anastomoses are carried out, which enveloping the ureter, send their prolongations inward through the muscular walls to supply the mucosa. It has been shown by Sampson, of

Johns Hopkins, that the ureter may be loosened out of its bed from the kidney to the bladder, and by virtue of this indulgent inosculation, undergoes no necrosis. If, however, the sheath is stripped away the peri-ureteral anastomosis is broken up and necrosis ensues.

The venous return is comparable to the arterial output.

The nerve reward is equally as great as the arterial, for the ureter is enervated in its different segments by the lumbar, sacral and pelvic chain, highly supplied with appropriate ganglia and anastomosing filaments. As Byron-Robinson has shown, there are three points of rich anastomosis—(1) where the plexus ureteris and the ovarian or spermatic coalesce, explaining, by irritation, ovarian pain, retraction of the testicle, etc.; (2) where the plexus ureteris and plexus uterinæ solidify, explaining uterine and vesical pain and disturbances; (3) where the plexus ureteris and that covering the internal iliac artery unite, explaining the pain in the thigh and knee. This referred pain must not be misleading. It is sent out through the abdominal brain, the big epigastric plexus, the central headquarters for intra-abdominal sympathetic involvement; and is comparable to the initial pain of appendicitis, being referred to the gastric, and not to the right iliac region.

The writer has already referred to the normal calibre of this tube. There are, however, three constrictions, physiologic narrowings of the lumen, which are constantly present—(1) the proximal, at the lower renal pole, averaging one-twelfth inch in diameter; (2) the middle, at the point of crossing the iliac artery, averaging one-seventh inch in diameter; (3) the distal, in the vesicle wall (not at its mouth), averaging a tenth inch in diameter. The narrowest is the first. It is here that calculi are caught, giving rise to that agonizing condition, kidney colic. Physiological constrictions of musculo-membranous tracts are instanced regularly; the esophagus emptying into the stomach, the stomach into the small intestine, the small into the large intestine, the Fallopian tube, the urethra, etc. Dilatations are found between the constrictions; dilatations and constrictions are complementary—either both or neither must exist.

Independent of the character of the urine,

the physiologic office of the ureter is to secrete and propel urine, convey sensations, absorb, and prevent regurgitation. Its office is, however, modified, exaggerated or inhibited by a diluted normal urine, or by urine from a diseased or imperfect kidney, such as Bright's, pus-kidney, tuberculosis, etc., and also by derangement of the integrity of the sympathetic system. Peristaltic waves begin at the pelvis and rhythmically extend downward to the distal end. The point of contraction may be seen as an exsanguinated white circle enveloping the ureter. spurts of urine are forced into the bladder from every two to four minutes; the ureteral mouth opens, the jet is thrown into the bladder, the intramural segment of the ureter closes down proximally-distally. There is no regurgitation into the ureter's lumen. The force of contraction of the ureter and muscular effort in propelling urine into a filled and tense bladder is always greater than the resistance. Whether there is a maximum or minimum bladder resistance, the ureter's power is always plus. The discomfort, pain and distress of a filled bladder is doubtless due as much to the violent peristaltic waves and ureteral muscular contractions to throw urine into a now already overfilled and resisting reservoir, as it is due to the stretching and tension on the bladder wall itself.

Pieces of the ureter cut out and put into a warm salt solution undergo rhythmical contraction and relaxation. A cross section of the ureter shows its lumen to be stellate, and, therefore, capable of distention and considerable muscular power. Jagged, irregular and uneven stones are forcibly driven along this canal by its muscular power.

With a chronically thickened or distended bladder, which never experiences the ease of complete collapse with its walls in apposition, but offering always an increased and increasing resistance to the ureter's wave, a compensatory hypertrophy of the ureter is set up. Its walls become thicker and heavier, but the ureteral mouth is continent and holds against any back pressure until a replacement fibrosis is inaugurated. At that moment the strength of the opening is overtested (fibrous tissue being inelastic), the heretofore resisting gateway is now broken down, and a hydro-ureter is started. This means distention of the kidney

pelvis, pressure on the calyces and medulla, venous congestion of the kidney, insufficient functioning power, constitutional involvement.

It is with woman particularly that many of the pelvic lesions from which she suffers encroach upon the ureter. Myoma, fibroids, subluxations of the ureter, versions and flexions, antero-posteriorly and laterally, tend to bend, nick and interfere with the normal output of the kidney; the pregnant uterus, by virtue of its great weight and volume, encroaches upon the ureter, particularly in its pelvic course, since the ureter is more protected in its abdominal excursion by its normal bed in the para-vertebral recesses. An elongated and flaccid mesentery, the intestines sinking into the pelvis, visceroptosis, chronic constipation and the pressure of fecal tumors upon the ureter, particularly about the sigmoid and upper rectum, enlarged tubercular or calcified retroperitoneal lymph nodes, aneurism, tumefactions, malignant overgrowths in and about the pelvic inlet, lumbar, Pott's disease, neoplasms of the anterior rectal wall, rectocele, vesical tumors, hernia, calculus and cystocele, intraligamentous cysts, suppuration and hæmatoma, ectopic pregnancy, pus tubes, dislocated, neoplastic or cystic ovary ruptures Graafian follicles with cellular adhesions in the fossa ovarica, intra-abdominal lesions producing fibrosis, tubercular peritonitis, concentric hypertrophy, cricket, ball bladder with consequent intramural pressure on the ureter, prostatic hypertrophy, urethral stricture, and last, but not least, carcinoma of the cervix—are some of the lesions more frequently met with by the general surgeon and gynecologist, whose presence, influence or growth distress, intrude, press upon, compromise or inhibit the normal physiological function of the ureter and the consequent output of the kidney.

Sampson has shown that in 156 operations for cancer of the cervix the ureter was injured 19 times; and in over 4,500 other major gynecological operations the ureter was injured only 11 times. This relationship is easily explained by the early involvement of the parametrium, and extension outwards of the carcinomatous growth. The only hope lies in the earliest possible recognition of cervical carcinoma, and its radical removal. When we recall the great vascular supply to the pelvic

portion of the ureter and its intimate association with the uterus, the menstrual congestion of all the pelvic organs shows itself in the ureter during the period and afterwards, by shedding off of the ureteral epithelium. This should not be misleading, as it is physiologic and not pathologic. Excessive ureteral peristalsis is instanced when large amounts of water have been taken, and in the toxemias of chronic constipation and pregnancy; where the by-products of metabolism are thrown off in a concentrated form.

When the bladder is filled with a clear fluid or with air, catheterization of the ureters is a comparatively simple procedure, painless to the patient, requires no chloroform, and may be the means of diagnosing obscure conditions. The catheter is easily shoved on to the pelvis of the kidney, which may be washed out for different forms of infection. Impacted or suspected calculi are felt in the passage of the catheter. It may be left in situ and a photograph or X-ray taken for the identification of supernumerary or aberrant ureters. The value of ureter catheterization for segregation of the urine for diagnostic purposes has now become perfected. In the pregnant state, it is the right kidney which is usually found to be at fault. This is doubtless due to the linear attachment of the mesentery, which, starting above, crosses the lumbar vertebræ downwards and to the right, ending in the right iliac fossa.

Ureteral strictures, those strictures caused by pressure or by injuries to the parietal layer of the peritoneum, can be traced by graduated soundings. The pelvic portion of the ureter can be brought into sufficient alignment with the urethra in the female to allow of endoscopic examination. This, however, is unsatisfactory, as the calibre of the tube is so small that the visual field shows but little. Catheterization of the ureters, again, may help us to ascertain the degree of infection of the bladder—the urine from above the bladder and that from the bladder being compared. Again, the functioning capacity of the two kidneys may be compared by the injection of phloridzin, causing temporary glycosuria, by the use of methylene blue, freezing the blood and urine.

In conclusion, then, the writer would emphasize the anatomical association of the ureter with the other important pelvic organs, its con-

stant activity, its danger of infection by involvement by cancerous overgrowths, its ready and easy accessibility to soundings and to catheterization. It is also readily palpable by the vagina and rectum; it cannot be felt satisfactorily through the abdominal wall, although there are some who claim to be able to trace it throughout its entire abdominal excursion; and, if injured, it may be transplanted into the intestine, into the appendix, into the bladder, into the opposite ureter, or by the various methods the two ends can be brought together. This is done by the extra-peritoneal route.

The writer has had under observation a young girl, 10 years old, in whom there was, beside the two normal ureters, another ureter leading from the left kidney and opening into the vagina. It was, by ascending infection, the source of a severe pyelitis on the left side. The discharge of the urine through the vagina was not noticed for some time. The left kidney was finally cut down upon, retrograde catheterization carried out, the catheter which came through into the vagina identifying the ureter which had been the cause of the trouble. It was tied off close to the bottom of the pelvis of the kidney, and resected. The vaginal orifice was well developed and unusually resistant to catheterization. Up to the present time there has been no sign or evidence of further trouble; the left kidney has cleared up, the child is now in better health than it has ever been, and there have been no evidences of infection starting from the vagina and ascending throughout the course of this ureter.

The writer recently had under observation a colored man, 31 years old, on whom a perineal section was performed for tuberculosis of the seminal vesicles. In the course of the operation the right ureter was completely severed, and owing to the duration of the operation and the rather bad condition of the patient, a tube was inserted into the tissues and the patient returned to bed. For three weeks equal amounts of urine drained from the bladder and from the perineal tube. Soon the amount by the perineum became less. There was never at any time any temperature, discomfort or pain in the pelvis or along the course of the ureter. The patient was discharged at the end of five weeks, the perineal wound having completely closed, there being

no discharge of urine or pus. Whether the ureter in this instance became sacculated, forming a new wall from its sheath in the surrounding tissues, or whether the ureter closed up, causing the death of the kidney above with no constitutional symptoms whatever, the writer is unable to say. It is at least of interest in that the recovery was rapid; the man is now at work and seemingly enjoys good health.

SIMPLE AND EASY WAY TO REMOVE A COLLAPSED EYE-BALL.

By D. D. WILLCOX, M. D., Petersburg, Va.

Visiting Oculist and Aurist to Petersburg Hospital, Etc.

When an eye is so badly injured that its contents have escaped—whether by accident during the operation for its removal (which frequently happens in the hands of the most careful operator), or by traumatism and disease beforehand—it is a difficult proposition to properly dissect it out, in order to get a good socket for an artificial eye.

The proper procedure is to enlarge the opening through which the contents have escaped, so as to push the index finger into the globe, and force out the remaining contents. Then pack the cavity with cotton, previously soaked in hot bichloride of mercury solution of the proper strength. Then stitch the wound over the cotton—thus re-establishing the globe—and proceed with rest of the operation in the usual manner.

A sterilized marble can be substituted in place of the cotton packing, but this does not control hemorrhage so well as the cotton.

A SANITARY VILLA UPON A PEAK OF THE APPALACHIANS.*

By JAMES A. BURROUGHS, M. D., Asheville, N. C.

It would be an intrusion upon the time of the members of the Tri-State, and a travesty upon nature, for me or any one else to attempt to describe the stimulating, life-giving properties of the Asheville climate, with its balmy atmosphere tempered by the magnificent mountains, which encircle and protect the city.

The water supply of Asheville is possibly as good, pure and safe as can be procured. It is simply water, like the Poland water—just H₂O.

*Read during the session of the Tri-State Medical Association of the Carolinas and Virginia, at Charlotte, N. C., February, 1908.

The watershed is owned by the city of Asheville, and consists of several thousand acres of land, uncontaminated by man or beast. This watershed is closely watched by rangers employed by the city. The intake has constant supervision.

This water is as clear as light. It is collected from the springs of Mt. Mitchell—the highest peak east of the Rocky Mountains—and is brought twenty-three miles to Asheville, in pipes, by gravitation, at a pressure of 135 pounds to the square inch.

This pure, crystal water has been placed within reach of the humblest citizen. Wells have been condemned and largely closed. Since having this water during the last five years, typhoid fever and dysentery have been practically eliminated from the death records of Asheville, as the city records show; also, the sale of mineral waters has largely decreased.

Sewers are on every street upon which water mains are laid. Nature has done much for the villa; in the way of its general contour, toward a perfect system of sewerage. The natural drainage from any point is to the French Broad River, which partially encircles the city. All surface closets have been condemned, and owners or occupants of property are alike compelled to connect with the public sewers.

Our streets are constructed of brick or crushed stone cemented, and surfaced with pitch, which makes them absolutely waterproof.

The principal streets are flushed twice daily with great force, carrying off into the sewers all refuse, and preventing dust storms in Asheville. Sheet iron boxes are placed at convenient points for the reception of paper and other trash, which is removed daily and cremated at a proper distance from the town.

Asheville has as pure a water supply and as good a sewerage system as exists anywhere in the world. This statement is made after careful observation of some of the most extensive water supplies and sewerage systems of the country.

Asheville's sanitary laws are of the best and are partially observed with the assistance of the city physician, police, sanitary inspector, milk inspector and fly and mosquito man.

The city physician attends to the fact that each contagious and infectious disease is prop-

erly guarded, and sanitary regulations minutely carried out after release.

There exists at this time no hospital for eruptive fevers, save a house for smallpox far removed from the village. This defect will soon be remedied.

All expectoration of tuberculous patients is cremated. Seabury and Johnson's collapsable cuspidors are used by day and the hand cuspidors by night, and the papers are all cremated. No one expectorates upon the streets of this little mountain town without taking the risk of arrest and fine.

Asheville was the first point in the world where the authorities passed the anti-expectoration ordinance. The law has been fairly well observed here on sidewalks, in street cars and in public buildings. The consumptives visiting this place have been fairly careful in the observance of this ordinance. But I regret to state that the native inhabitants have given us the most trouble, notwithstanding that their spittal contained nothing more than saliva and tobacco juice.

Our food supply is most carefully guarded by a Market House inspector, and stale vegetables and meats are discarded and carted away. A member of the Board of Health is present when food is condemned. Our ordinance very properly allows no redress from this decision.

Our milk supply is something that the entire world might emulate. A milk inspector is kept in regular service by the Board of Health. He is authorized and acts in extracting milk from any and all dairies at will, and condemns or approves the same. This man is competent and capable, having served under Mr. Wilson in the Agricultural Department of the United States of America.

The milk supply of Asheville is very great, being the output of seventy odd dairies. The largest herds are under the supervision of a veterinary surgeon, and the milk is tested by a chemist and his assistants.

All unhealthy cattle retire to hospitals, and only good, healthy, sound cattle are permitted in milking sheds.

It is appropriate at this point to state that the milk from the largest dairy is collected by milkers in immaculate costumes, practically as your surgical nurses are dressed. The milkers have been preceded by those who wash the ud-

ders and teats with an antiseptic solution. The cows have been brushed or rubbed off before entering the sheds, so as to clean them from loose hair or dust.

From the milking sheds the milk is transported to the laboratory and each bottle of cream and milk is subject to the inspection of a chemist with his assistants. And under no conditions does an ounce of the milk or cream leave the laboratory unless it comes up to the required standard.

This is not so with all dairies, but is true of the two largest, which provide easily half of the milk of Asheville. And the other dairies will soon have to follow suit, as for some two years nothing but good milk has been sold in Asheville. Our milk inspector looks after the sanitary condition of each dairy as well as each herd of cattle. He sees that the cattle have good water, that the bedding in the stables is clean, and that the stables are properly ventilated.

Our Mr. McCormick, who was formerly in the government service, and who has so energetically and thoroughly supervised the health of cattle and the milk supply of Asheville, suggested two years ago last spring that he should make experiments for the extermination of house flies. The city accepted his services, and Mr. McCormick proceeded to work after the manner that he had proceeded under the United States Government. Mr. McCormick stated to the Asheville Board of Health that nineteen out of every twenty house flies were germinated or bred in horse manure. This was a revelation to me as well as to others. One of the experimental stations was at my barn with seven to nine horses, with the result that there were but few flies at my stable and scarcely any at my residence and servants' cottages.

There is no reason why every city and village in this country cannot have a pure water supply, a good sewerage system, cannot be kept clean, have pure milk and fewer flies, provided they have a local Board of Health with stamina, and a wise Board of Aldermen at their backs to support the situation.

The following is commonly efficacious for the removal of corns:

R—Salicylic acid, gr. xx; Fld. Ext. cannabis Ind., 3ss; collodion 3iv. M—Sig. Paint freely with brush twice daily.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.

Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE XLIV.

Gangrene—Definition—Causes—Varieties— Symptoms—Diagnosis—Prognosis— Treatment.

Gangrene, mortification, necrosis and sphacelus are synonymous terms used to designate the death of tissue *en masse*. English writers usually employ the word necrosis to designate death of bone, and apply the terms gangrene, mortification and sphacelus to death of soft tissue. Of late years a further distinction has been drawn, necrosis being applied to death in an internal structure, where, owing to the absence of saprophytic infection, putrefactive changes do not follow; gangrene and mortification being applied to death of parts of the body exposed to the atmosphere where, owing to saprophytic infection, the tissue soon undergoes putrefactive changes.

Causes.—Gangrene is not a disease, but is a condition which may result from general or local causes or a combination of both. Among the general causes may be mentioned starvation, old age, alcoholism, debility from overwork, and bad hygienic surroundings; also diabetes, nephritis, syphilis, scurvy, typhoid fever, and other diseases which lessen the resistance of tissue and lower the vitality of the body as a whole. The local causes may be classified under four heads.

1st. *Interference with Arterial Supply.* This may be due to traumatism where the injury results in the division or obliteration of a main artery, as in the case of a stab wound of the vessel; or it may be the result of pressure, as in bed sores due to leaving the patient too long in one position; or from over-stretching of the tissues, as in death of a flap after a plastic operation. It may follow the constriction of the lumen of an artery as in gangrene of the leg following ligation of the external iliac, or it may result from thrombosis and embolism, the coagulated blood obstructing the vessel and arresting the current. This is also the cause in

cases of gangrene due to disease of the arteries, such as arterio-sclerosis, which gradually lessens their lumen, or obliterative spasm of the muscular coat incident to the prolonged administration of ergot.

2d. *Interference with Venous Return.* This is as surely fatal to the vitality of a part as is the arrest of the arterial supply, and results from practically the same conditions. It may be due to an injury which partially or completely divides the vessel, to pressure from a tight bandage, splint or plaster cast; to ligation, as is sometimes seen in gangrene of the arm following ligation of the subclavian vein; or, it may be due to thrombosis or embolism blocking the large venous channel from some region unprotected by collateral vessels which remain unobstructed.

3d. *Interference with Trophic Innervation.*—For tissue to thrive, it must not only have proper arterial supply and venous return, but it must also have trophic innervation. Thus, There is neuropathic gangrene seen after fracture of the spine, due to functional disturbance of the so-called "trophic nerves," and there is also a symmetrical gangrene called Reynaud's disease, due to spasm of the vaso-constrictors, brought about by reflex action.

4th. *Direct Action of Destructive Agents on Tissue.*—There are certain causes which, independently of their action upon arteries, veins, or nerves, produce gangrene by direct destruction. Among these may be mentioned mechanical injury, such as is seen when an extremity is crushed beneath a car wheel; the action of heat and cold, as in the case of a burn or a frost-bite; strong chemicals, as nitric acid or caustic potash; and, finally and most important of all, acute inflammation may result in gangrene, by the direct action of the toxins produced by the bacteria. As an illustration may be cited the dead connective tissue which constitutes the core of a boil, or the more extensive death of tissue seen in the malignant edema of Pirogoff.

VARIETIES OF GANGRENE.

There are two varieties of gangrene, the dry and the moist, which present striking contrasts to each other in physical appearance. It must be remembered, however, that there are many gradations between the two extremes, and

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

sometimes the two types may be seen side by side in the same patient.

Dry or Chronic Gangrene. Dry gangrene usually develops slowly as the result of the gradual diminution of blood supply to the part. The fluid in the tissue has time to be removed by natural drainage or by evaporation, thus leaving the part hard and shrivelled. Decomposition takes place to only a limited extent; the skin becomes black and wrinkled, and there is but slight disturbance seen in the adjacent living tissue; usually a line of demarcation forms between the dead and living tissue. Often there are no constitutional symptoms.

Moist or Acute Gangrene. This develops quickly, usually as a result of sudden interference with arterial supply or venous return, and the tissue involved is full of fluid. The part becomes swollen, the skin mottled and discolored, and blisters form. These rupture, and evidences of decomposition and putrefaction are soon seen. Gases develop, a foul discharge is noted, and the tissues break down into a putrid mass. There is not often a line of demarcation between the diseased and healthy tissue, and usually constitutional symptoms are marked.

Symptoms.—The general symptoms of gangrene are due to the absorption of the products of decomposition. In dry gangrene there is but little septic intoxication, while in moist gangrene there is usually a chill, followed by high fever, rapid, irregular pulse shallow respiration, cold, clammy skin, frequently terminating in delirium, coma and death. The local symptoms are more interesting and of greater diagnostic importance.

Pain.—This may be practically absent at all stages of the process, for in senile gangrene there is no pain, but merely the presence of a numbness. Again, the beginning of the process may be indicated by sudden, agonizing pain, as is seen when an embolus lodges in the bifurcation of an artery and acute anemia follows. Finally, gangrene may be indicated by the sudden cessation of pain, as is seen in strangulated hernia or a bad case of appendicitis when death of the part ensues.

Tenderness.—As long as the part is tender it is not necrotic. Absence of sensation is a sign of death. Often the best way to con-

vince the patient or his friends of the necessity of an amputation in gangrene of an extremity is to stab the part with an aseptic needle.

Temperature.—In gangrene following an acute inflammation, the local temperature for a time is high, but, with cessation of circulation, it soon falls below normal.

Pulse.—The presence of pulsation in an artery shows that circulation is still going on; its absence shows that gangrene is either threatened or actually in existence. When an artery is suddenly obstructed by an embolus, or more slowly occluded by degenerative changes in its wall, the presence or absence of pulsation in its terminals is a point of great diagnostic importance.

Swelling.—In dry gangrene the part becomes hard and shrivelled and is said to be mummified. In moist gangrene the tissue becomes distended with fluid and with the gases of putrefaction, and is frequently swollen to twice its original size.

Emphysema.—In certain cases of moist gangrene there is the production of considerable quantity of gas in the tissue, which gives crepitation to the palpating finger. This usually indicates a rapid and grave type of the disease, and is due to infection with ærogenic bacteria.

Color.—If a large artery is suddenly obstructed by an embolus or ligature, its area of distribution presents at first a preternaturally pale appearance. As soon as decomposition begins, the red corpuscles of the blood undergo disintegration, and the coloring material is diffused through the dead tissue, which becomes blue and finally black. This is due to purely chemical changes, and is supposed to be the result of a combination of hydrogen sulphide with hæmoglobin.

Condition of the Tissues.—In dry gangrene the tissues, owing to evaporation of fluid, become firm and hard. In moist gangrene, owing to the presence of excessive fluid, they become soft and friable. In the first there is no discharge, but in the second a bloody, fetid fluid escapes from the dead tissue.

Odor.—There is little or no odor to dry gangrene, but in the moist gangrene there is an unbearable stench. The odor has the same characteristics and is due to the same chemical changes as that incident to decomposition of organic material under other conditions.

Line of Demarcation.—In some cases gangrene will progress to a certain point, then be arrested, and a line of demarcation will be formed between the dead and living tissues. In septic gangrene this line marks the limit of the area of infection, while in aseptic gangrene it indicates the point where the blood supply is adequate for nutrition.

Elimination of Necrotic Tissue.—Frequently there is spontaneous removal of the gangrenous part by absorption or encapsulation if the area is small, or by granulation suppuration or liquefaction if the area is large. When this takes place repair begins at the line of demarcation, and nature by the various processes of regeneration, endeavors to correct the injury sustained.

Diagnosis.—The diagnosis of gangrene is usually so easy that it can be made by sight and smell. The absence of circulation and of sensation, the subnormal temperature and discoloration, the mummification in the dry type and the rapid putrefaction in the moist variety, leave no room for doubt. There are occasionally cases, however, such as when a surgeon opens the sac of a strangulated hernia, when the question whether gangrene is threatened or in existence is one of paramount importance and difficulty. In such cases, when in doubt whether to excise the loop of bowel or return it to the abdominal cavity, it will be better not to do either, but to protect it with gauze wrung out of hot saline solution, and wait to see whether circulation will be restored or not.

Prognosis.—The prognosis in a case of gangrene is dependent on the nature of its cause, the rapidity of its progress, the presence or absence of complications, and the age and general condition of the patient.

Treatment.—The special indications for treatment of the various types of gangrene will be discussed in the next lecture. There are certain general principles, however, which apply to them all, which will be now considered. When gangrene threatens but is not actually in existence, prophylactic measures must be at once applied. The most important of these is an attempt to remove the cause. If it be due to pressure from a bandage or immobilizing dressing, take them off. If caused by decubitus, see that the patient's position in bed is changed at frequent intervals. If due to constriction

at a hernial ring, divide the constriction. If it results or is threatened by the swelling of acute inflammation, relieve the tension by prompt incision. If incident to a constitutional disease such as diabetes, endeavor to correct this by appropriate systemic treatment.

The second indication is to favor collateral circulation, and thus endeavor to supply adequate nutrition to the part and avert the threatened gangrene. If the main artery of a limb is obstructed, it should be placed in a horizontal or slightly elevated position, and kept warm by the external application of dry heat. If the premonitory symptoms of senile gangrene develop, the danger should be combated in increasing the circulation in the part by massage and electricity, emptying the veins several times a day by stripping the limb from the toes or fingers towards the trunk.

The third indication is to prevent infection. When gangrene threatens, the part should be rendered aseptic in the same manner as it would be prepared for a surgical operation, and the parts protected against infection by putrefactive bacteria by a dry absorbent antiseptic dressing.

If gangrene develops, owing to the neglect of, or despite the use of the foregoing measures, then becomes necessary the consideration of the curative treatment. This consists in the administration of remedies to sustain the strength of the patient, and in operative procedures for removal of the dead tissue. Pain should be relieved by morphine. If fever is high, it should be combated by local measures to prevent absorption of phlogistic products, and by the use of cold sponging or alcoholic baths. Most patients suffering with gangrene are feeble and debilitated, and the use of antifebrin, antipyrin, veratrum viride and similar drugs is strongly to be condemned. Strychnine, digitalis, quinine and iron are indicated, but the surgeon's main reliance to sustain strength should be the use of alcoholic stimulants and nutritious food.

The question of surgical intervention for the removal of gangrenous tissue is one of grave importance. The success of operations performed after the formation of the line of demarcation, when compared with the results of those performed before its development, led the older surgeons to advocate waiting until nature indi-

ected the site of the incision. In some cases, especially in dry gangrene, this is good practice, but in others, especially, for example in the progressive moist variety, to wait for the line of demarcation would be to wait for something which will never develop. In dry gangrene, if there are no grave septic symptoms, the surgeon should wait until the dead tissue separates from the living, when frequently, simply with scissors and bone pliers, he can cut the more resisting structures and allow the resulting surface to heal by granulation under a simple dressing. Occasionally a more formal operation is indicated in order to secure flaps which will unite by primary intention and thus shorten the time of convalescence and secure a more satisfactory stump.

In moist gangrene, however, where there are symptoms of septic intoxication, early and radical operation gives the only chance for life. The more acute the symptoms and the more rapid the progress of the gangrene, the greater should be the distance of the amputation from the dead tissue. If the gangrene be due to obstruction of a large vessel and an ascending thrombosis, the amputation should invariably be made at a point where the vessels are not occluded. The application of an Esmarch's bandage to the extremity is strongly to be condemned, as it forces toxic products into the general circulation. The limb should be held in an elevated position by an assistant for a few moments, and the tourniquet then applied. The condition is a desperate one, and while the work should be done properly, no unnecessary time should be sacrificed in the accurate coaptation of structures or the artistic application of dressings. As the tissues are always edematous and there is more than the usual danger of infection, the wound should be thoroughly drained. If, as is unfortunately often the case, gangrene recurs in the stump, a second operation gives but poor promise of better success and usually all that can be done is to remove the stitches, expose the entire cut surface, and treat with moist antiseptic dressings.

Book Notices.

Every-Day Diseases of Children, and Their Rational Treatment. By GEORGE H. CANDLER, M. D.

Clinic Publishing Co. Chicago, Ill. 1907. 12mo. 386 pages. Cloth, \$1 00.

This is a book of much utility to the everyday doctor. There is little of theory in its pages, but good descriptions of the common diseases of children, and lines of treatment, which seem well based on observation and experience are plainly given. It could scarcely be classed as a systematic treatise nor as a highly scientific book; but it is a fine *practitioner's ready reference* book. As the architect needs the bricklayer and the carpenter, so this book comes in to fill *the practitioner's bedside wants*. The work includes sections or chapters on nearly the entire range of diseases discussed in fuller books on pediatrics. But none of the latter is so complete in directions or advice as to what to do and how to do it as the volume now under notice. This is its excellence.

Editorial.

A Progressive Move for Our Public Institutions.

In passing the bill providing for a State Board of Charities and Correction the Legislature has done an excellent thing and shown a commendable spirit of advancement in dealing with the dependant, defective and criminal classes of the State. Having purely-visitorial, advisory and reportorial functions and nothing to do with appointments, patronage of any kind or awarding of contracts, such a board, composed of conscientious, strong men imbued with a progressive public spirit, can but be instrumental in encouraging and bringing about the best possible efforts in the management of institutions and in inspiring public confidence which has frequently been lacking. It would furthermore give out information respecting the care of the inmates of such institutions that would have a wholesome effect, by showing their needs and leading to more liberal consideration on the part of those who make appropriations for their maintenance. It is a well-known fact that Virginia is far behind many of her sister States, particularly in the matter of the conduct of the jails and alms houses, many of which are in a deplorable condition.

Charities and the Commons, a journal devoted

ed to philanthropic and social advance, says, in its issue of March 21st:

"A State Board of Charities and Correction is finally a reality in Virginia. For several years the necessity for such a board has been a subject of annual discussion in the Virginia State Conference of Charities and Correction. Last fall, at the Jamestown Exposition, the conference, under the presidency of Dr. William F. Drewry, again devoted considerable time to this subject and, at the recent session of the Virginia Legislature, a bill was passed creating the board. Dr. Drewry was author of the measure whose principal provisions follow:

The board consists of five members to serve five years. It is to be appointed by the governor and approved by the State Senate. The members will receive no salary except traveling expenses. The board, as a whole, or a sub-committee, will inspect all the State institutions, penitentiary, reformatories, jails, alms-houses and all institutions having the care of the defective delinquent or dependent classes and make a report once a year to the governor, every two years to the Legislature, and after such inspection to the authorities of the institution they inspected. A local board of three, one of whom is to be a member of the local board of health, is appointed by the State Board to inspect the local institutions frequently and report to the State Board which appoints a secretary and assistant secretary who are invested with the powers of inspection. In the event of the governor wishing a State institution investigated, he can order the board to visit it, giving it full power to examine witnesses. Except in a case of this kind, it is purely an advisory and visitorial board. The appropriation to begin with is \$5,000 a year."

The board will be provided with an office at the Capitol, and there are to be a secretary and an assistant secretary, appointed by the board and be under the control and direction of the board.

National Conference of Charities and Correction to Meet in Richmond, in May. A Notable Gathering.

Virginia is fortunate in having the National Conference of Charities and Correction to meet in Richmond, May 6-13. This is a notable organization of men and women, which

meets annually to discuss problems of charity and correction, to disseminate information and promote reforms, but it does not formulate platforms nor assume any legislative functions. There will be about two thousand members and delegates in attendance, many of whom will be distinguished physicians and sociologists. At the opening meeting Governor Swanson will make the chief address, dealing largely with the relation of the State with the public institutions under State control. Among the several subjects that will be discussed are: State supervision of charitable and correctional institutions, public health, tuberculosis, the health outlook for the negro, the insane, epileptics, idiots, the feeble-minded, the criminal, etc. As physicians have to deal with many of the subjects that will be considered at this Conference, it would be well for our Virginia physicians to attend the meeting, for they would gain much information that would be of value to them in their broad field of activity and usefulness.

Wherever the Conference has met it has been a great public educator, and the results which have followed have been very gratifying to people most competent to judge.

Among the chief officers of the Conference are: President, Hon. Thomas M. Mulry, of New York; Vice-President, Oscar K. Cushing, of San Francisco; General Secretary, Alexander Johnson, of Indianapolis; members of the executive council, Mr. E. T. Devine, Editor *Charities*, New York; Mr. John M. Glenn, of Baltimore, Trustee Russell Sage Foundation; Dr. W. F. Drewry, of Petersburg, Chairman of section on the insane and epileptics; Dr. J. T. Searcy, Superintendent Alabama State Hospital.

The Patrick-Henry Medical Society

Met at Stuart, Va., April 8; 1908. The following papers were on the program for the session: Diarrhœa and Dysentery, by Dr. B. T. Tatum; Laceration of the Perineum, by Dr. J. W. Simmons; Uncinariasis (Hook Worm), by Dr. W. B. Moore; Diarrhœa, by Dr. C. H. Ross; Necrosis of Bone, by Dr. Pless; and Reports of Clinical Cases, by several members.

Dr. R. R. Lee, of Martinsville, is President, and Dr. J. R. Perkins, of Spencer, is Secretary and Treasurer.

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Original Communications.

SOME SALIENT POINTS ON THE PROPER CONTROL AND EXAMINATION OF A SICK CHILD, AND THE VALUE OF SYMPTOMA- TOLOGY.*

By G. W. COCKE, M. D., Danville, Va.

The examination of a sick child offers difficulties and peculiarities which are not patent in the adult. When called to see a sick child find out, if possible, before entering the nursery, the child's temperament and by the aid of this information regulate the manner in which to approach the case. Of course, an infant too young to fear or notice, or a child of a quiet phlegmatic temperament, or one that is too sick to object to being handled, can be examined as soon as approached with the same regularity and precision that one would examine an adult. But we have an entirely different proposition to deal with when called upon to examine children who are nervous, excitable, timid or who are spoiled and vicious.

In dealing with the first or more difficult class of the cases, much deliberation in the way in which we approach the child is necessary, and much tact in speaking to the child is required. In the second class, or the spoiled and vicious, no time can be gained by delaying examination; the sooner it is made with firmness and persistence the less trying it will be, both for child and mother.

Let us remember this fact in dealing with children of all classes, that the greatest amount of information is to be obtained by observation; so that the close study of symptoms must frequently displace the more exact measures of diagnosis, which are useful in adult life.

It is not only helpful, but very important, that the child's mental traits be considered.

*Read during the session of the Tri-State Medical Association of the Carolinas and Virginia, Charlotte, N. C., February, 1908.

Advantage may be taken of these to secure at least a partial co-operation in the examination. The most noticeable power is that of attention. Not only is there the power of attention to direct itself toward any object which is presented, but there is often an inability on the part of the child to avoid doing so.

The things that are going on in the room command its attention—the child gives its attention instinctively to such things. This is true, in part, because curiosity is so strong at this period of life—and some never get away from childhood in this particular. With the nervous and timid child it is wise to make it think you are not looking at or taking any notice of it. It is well to look at the toys and take interest in them, and the pictures on the walls, etc., and the child will soon become accustomed to the doctor's presence and will take the same interest in the doctor and his watch that he takes in the child's toys; and you can often, at once, get complete control of your little patient in this way; subsequent control and examination are much easier if the affections are won, for affection is very strong during childhood.

The approach to the child should be very gradual and guarded, for remember that the doctor is dealing with an irrational and easily frightened being, whose disease has probably irritated and exhausted it to such an extent that it lacks self-control. However, I am not making and laying down any set of hard and fast rules to win the confidence of every child. Some children require to be completely ignored for the time being, while obtaining the history; another child must be approached at once. Remember that nervous children are generally less nervous and more docile and self-confident in their mother's laps than they are on the bed or in the crib. So much for the first division of my subject, *control*.

Now what of the examination of the child?

First, it might not be out of place to say something of the examiner.

That some are born doctors; many are made doctors, and quite a number are spoiled in their making is an addage which bears a degree of truth. The child's doctor is born only; he cannot be made. The man who always carries a smile in his eye and a certain way with him, can do more good by merely holding the baby a minute or two than the stiff, pompous or nervous clumsy doctor can accomplish in a whole day. His presence is hailed by mother and sick child with equal delight; the approach of the other doctor is heralded by cries of the apprehensive little one and the weary expostulations of its mother. To the first the little sick arms go out and whatever the doctor wants done is generally done, even if it does hurt; while to the second the little sick arms go around the mother's neck; it requires assistants to hold the child to enable the doctor to see the tongue, etc., who shouts his orders to a frenzied mother. When such a doctor tries to examine the child's throat or palpate the abdomen the procedures resemble a free-for-all fight. That a really sick child derives benefit from the visits of such a doctor is very doubtful. And as mothers have a remarkable faculty of knowing what helps their little ones, the unpleasant doctor, no matter how clever, is likely to find his pediatric practice growing less. On the other hand the man who cures the child, has the confidence and love of the mother, and the doctor who treats her, is very apt to become the family doctor.

As a rule, it is not difficult to win children, even when sick, but certain qualities and procedures are essential to success. First, never deceive a child; be gentle, but firm and positive in action; spend a few moments in getting acquainted. If you have to do a painful or a disagreeable thing, tell the child if he asks, that it is painful, but that it must be done to get him well and that other boys or girls have gone through with the same thing. It is often a good plan to offer some reward for good behavior and be sure to give it; never promise a child a thing and not give it; they at once lose confidence in you. Take pains to save pain. A tube of ethyl chloride, a bottle of chloroform, a little cocaine solution will enable you to do many things without causing suffering

and make many fast and lasting friends. Be gentle and try never to hurry and never cause the little one any more discomfort than can be avoided, and always present the brightest side of things. Remember to keep the aim of examination in view—viz.: To discover the nature, and, if possible, the cause of the disease. This requires thoroughness and great patience. Very slight causes may produce very grave symptoms; and these often change with great rapidity. Fortunately, there are not as many, nor as complicated, diseases met with in early life as in adults. But there is greater variation in the clinical picture presented. It is, therefore, very important to get as accurate and concise history of the case as possible, and the family history as well. It is wise, while the mother or nurse is talking, to watch the child. The face and the expressions tell many stories to the trained eye and the actions tell more. The doctor should have in his mind an orderly arrangement of the symptoms so as to arrive at right conclusions.

The statement as regards the time of onset will place the disease in one of two categories—viz.: Acute or chronic. What is the age of child is another intelligent interrogation, as an aid in diagnosis. During the first year diseases affecting the mucous membranes of the gastro-intestinal tract and nutrition largely predominate. From the sixth to thirteenth month and through the period of weaning, there exists a tendency to affections of the mouth, eclampsia and catarrhs of the large and small intestines. During the second year diseases show a marked preference for the mucous membranes of the respiratory tract, but the gastro-enteric diseases are still important factors. From the second to the sixth year the acute infectious diseases are common. Ascertain, if possible, the child's previous condition. Was the child fullterm or abortive? If the latter there is quite sufficient reason for the child remaining weak and anemic for a long time. Was the delivery of the child long and protracted and were forceps used? If so, it may account for a subsequent epilepsy or mental deficiency. Find out how the child was fed, quality of milk, etc., and as complete a history of the present illness as possible. This is best done by putting some such leading question as this: Of what does the child complain

or seem to suffer? Do not say what is the matter with the child. If you do you are more than likely to get such retort as "I don't know, Doctor; that is what I sent for you for, to tell me what was the matter." You should not, as a rule, interrupt when the history is being given by the mother or nurse; give them full scope, and in the meanwhile the doctor should be studying two things—this history of the child as given and the temperament of the one who gives it. The latter is quite important, as there is a tendency in some to withhold certain symptoms or so to exaggerate particular ones that real important ones are overlooked entirely.

On the other hand, there are those who will enlarge upon all the symptoms in order to excite interest and elicit sympathy. Many deceive unintentionally. If the patient is asleep when you arrive don't allow the mother to awake it until you have made some observations—counted respirations, pulse, taken temperature, etc. Remember the rectum is reliable for temperature. If possible auscult and percuss also while the patient is asleep, and if not, avoid using too many instruments during the first visit. Examine the pupils, and if there is any irregularity, there may be meningeal trouble. Also examine the ears, mouth and nose, as the trouble may be located here. The cry of the child is often of diagnostic value. The more delicate the child and the more unstable its nervous system the more easily it cries. Cold feet, uncomfortable clothes, soiled napkins, anger and hunger are the most frequent causes. The cry of hunger is irregular and fretful and usually ceases when the child is fed. The cry of indigestion is very similar, but feeding aggravates, rather than lessens the crying. The cry of pain is a sharp and piercing cry.

The position of the child should also be noted. If there is pain in the abdomen, as a rule, the child lies on its back with legs flexed on the belly. Opisthotonos is seen in meningitis and tetanus.

The skin should also be carefully examined for eruptions and whether it is dry or moist.

If peculiar conditions exist in the child, which your examination fails to clear up, examine the father of the child. Always have an infant undressed before deciding what the

trouble is. The prick of a pin has more than once caused convulsions.

THE MODERN SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE—ANALYSIS OF OVER FIVE HUNDRED CASES TREATED OPERATIVELY—CONCLUSIONS.

By AIME PAUL HEINECK, M. D., Chicago, Ill.
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So as to convey a definite conception of what we understand and of what we mean by the term "exophthalmic goitre," at the outset, we will quote two definitions—one from a popular text-book of Practical Medicine, the other from an equally authoritative text-book of Practical Surgery.

(a) Exophthalmic goitre is an affection, the chief symptoms of which are goitre, exophthalmos, tachycardia and tremor. In pronounced cases, other symptoms, chiefly of a nervous nature, are present.¹

(b) Exophthalmic goitre is a disease characterized by an enlargement of the thyroid gland, palpitation and increased frequency of the heart's action, by proptosis, fine tremor and general nervousness.²

By goitre we understand an enlargement of the thyroid gland, which may be symmetrical, involving the entire structure, or which may be partial, as nodules and cysts. Murray³ noticed an enlargement of the thyroid body in 172 out of 180 cases. In five of the remaining cases there had been a goitre at an earlier stage of the disease. Kocher (Berne, Switzerland,) says that he has never seen a well developed case without a goitre. Mayo (Rochester, Minn.) says that in those cases in which there is an apparent absence of goitre, a careful examination will usually disclose a small unilateral or bilateral tumor, which lies deeper but is firmer than normal thyroid tissue. It is not the mere size of the gland which is of importance, but its structural alterations.

The enlargement of the gland, according to the same author, is generally uniform. This is contradicted by equally good observers, and is contrary to my observations. Thomson⁴ describes severe and fatal cases in which both goitre and exophthalmia have been absent. According to some authors, exophthalmia is

entirely absent in about one-fourth of the cases. It is further to be remembered that the symptoms do not appear in any regular order. We must also bear in mind that these symptoms vary in relative degree in different cases.

By tachycardia, we wish to denote a disturbance in the action of the heart, which is expressed in increased frequency. Tachycardia, not of a paroxysmal or of a transitory nature, but of a permanent character, is the most constant symptom of this affection. The tremor in this condition is rapid and vibratory, there being as many as eight to ten vibrations per second.

It is important to remember that any individual symptom of exophthalmic goitre may be inconspicuous, or may be absent during a part or the entire course of any individual case of the disease.

There are primary and secondary forms of this affection. From an etiological, pathological and therapeutical standpoint, the classification into primary and secondary forms is consistent and valuable. In the primary form there is a concurrent development of the goitre and some of the other symptoms characteristic of this affection. In the secondary cases the symptom-complex of this affection is grafted upon a pre-existing enlargement of the thyroid body. All varieties of goitre, irrespective of size, type or state, from simple cysts to malignant tumors, may be associated with the symptom-complex of exophthalmic goitre; and it is further to be noted that in all of the secondary forms, excepting those associated with malignant disease, the prognosis of surgical intervention is better than in the primary form, both as to recovery from the operation and as to recovery from the disease.—Dean Lewis.⁵

In our perusal of the literature, the frequency with which diagnostic errors concerning this affection are made, surprised us. It is often thought to exist when absent. Pulsating exophthalmos—a totally distinct malady—seems to have been the most frequent source of error. Many operators do not seem to have differentiated between operations for ordinary goitre and those for exophthalmic goitre, either of the primary or of the secondary form. In a discussion on treatment, these two conditions must be considered always sepa-

ately. Many of the tables that are constantly referred to in the literature on this subject are, owing to these diagnostic errors, honeycombed with inaccuracies.

Authors are not in accord either as to the etiology or as to the primary pathological cause of exophthalmic goitre; therefore, the treatment most appropriate for this affection is still a matter of discussion. Owing to the fact that the ultimate cause of this affection is still a matter of *speculation*; theories have been advanced, and have been made use of, and are still used as foundations for apparently appropriate lines of treatment. Many of these theories have been abandoned. They were based on insufficient knowledge, on misinterpreted clinical and pathological data.

We will discuss briefly some of the theories which still have advocates: (a) The cardiac theory; (b) the compression theory; (c) the sympathetic theory; (d) the nervous theory; (e) the parathyroid theory; (f) the thymus theory; (g) the thyroid theory, and then adopt as a working basis that theory which is least in conflict with facts.

(a) *The Cardiac Theory*.—Tachycardia, palpitation, thrills and murmurs in the cardiac region; displacement and diffusiveness of the apex beat; increased area of a cardiac nature, led many of the early observers, such as Perry, Stokes, Graves, Luton, and Beau, to think that the cause of this affection originates or resides in the heart. The cardiac theory is *defective, because*:

1. Those cardiac disturbances that occur in exophthalmic goitre can, and frequently do, occur independently of this disease—viz.: Toxic palpitation and essential tachycardia.

2. They can occur as symptoms in conditions totally distinct from exophthalmic goitre.

3. Cases of exophthalmic goitre occur in which they are absent.

4. The cardiac disturbances met in this affection are not exciting factors. They are due to co-existing or to complicating functional or organic diseases of the musculature, or of the various valves of the heart. We must not forget that long continued excessive rapid action of the heart may beget organic changes in this organ.

5. In by far the largest number of cases of exophthalmic goitre that have come to the

autopsy table, an absence of cardiac lesions has been noted. In some cases, moderate hypertrophy, with or without ventricular dilatation and endocardial disease, was present. The dilatation of the heart has been ascribed to its quick action; the systole is too short to be complete, residual blood gradually entails overdistension and dilatation. This disease can occur in individuals with pathologic hearts, and then the symptoms of the original lesion will be suspended to the cardiac manifestations of the affection we are now discussing.

6. The cure of the exophthalmic goitre does not cure any of the co-existing organic cardiac lesions. Kocher reports two cases of exophthalmic goitre co-existing with mitral insufficiency. The symptoms of exophthalmic goitre were cured by partial thyroidectomy. The symptoms of mitral insufficiency were uninfluenced and persisted. This helps to show the non-interdependence of the two conditions.

(b) *The Compression Theory.*—When Til-laux performed his first thyroidectomy for the relief of exophthalmic goitre, he believed that the compression exerted by the hypertrophied thyroid gland on the important vascular and nervous structures at the base of the neck was the determining cause of this disease. His patient recovered from the operation and from the disease, but the explanation which he advanced was erroneous. He later abandoned the compression theory. It has had many, and still has, a few eminent advocates. It is untenable because—

It is hard to understand (a) how unilateral⁶ compression (the thyroid enlargement may be unilateral, though it is more frequently bilateral) can cause bilateral exophthalmos.

(b) How unilateral enlargement of the thyroid gland can cause unilateral exophthalmos of the opposite side of the body, as in the cases reported by Panas and by Gros,⁶ etc.

(c) How a unilateral exophthalmos can be dependent upon a bilateral enlargement of the thyroid body. How a bilateral exophthalmos can become unilateral without an associated diminution in the size of the thyroid body. And again, if compression be the cause, why do the symptoms bear no relation to the degree of thyroid enlargement, for it is an acknowledged fact that in some cases of great severity it takes the most precise and painstaking palpa-

tion to detect any enlargement of the thyroid gland. Easily detectable enlargement of the thyroid gland, like every other cardinal symptom of this affection, may be absent in individual cases. As a rule, the enlargement of the thyroid is not very great in this disease. The severity of the toxæmia in Grave's disease seems to bear no relation to the degree of thyroid hypertrophy.

(d) Why, if upon any of the neighboring nerves compression be exerted by the enlarged thyroid gland the recurrent laryngeal nerves (which, by virtue of their anatomical location, would be the ones involved most frequently) are so uncommonly in this affection the seat of compression paralysis? They are involved far less frequently than in cases of simple goitre. There are, at the most, only ten cases of exophthalmic goitre, in which paralysis of one or of both recurrent laryngeal nerves has been observed and reported. The recurrent laryngeal nerve supplies all the intrinsic laryngeal muscles with the exception of the crico-thyroid.

(e) Why do not massive tumors of the base of the neck determine exophthalmic symptoms? Why is it that large parenchymatous or cystic goitres can exist for years and never be productive of, or be associated with, the symptom-complex of this disease? If compression were a determining factor of this disease its action would be invariable. Under like conditions, it would produce like results.

(f) If the symptoms were due to pressure they would disappear immediately and completely on the removal of the compressing agent. We know that they do not thus disappear.

(c) *The Sympathetic Theory.*—This theory was advanced by Kobens, defended by Trousseau, Oppenheimer and others. Only a few clinicians now advocate it. Disturbances of the sympathetic system, with or without structural change, can explain some of the symptoms of this disease. They fail to explain many. Observers of note, such as Abadie, Jaboulay, Poncet, Jonnesco, etc., have looked upon the cervical sympathetic trunk and its ganglia as the primary seat of the disease—as the *fons et origo mali*. In the primary forms of the affection some have advised, and the last three individuals mentioned have devised and performed operations upon the sympathetic

nerves for the relief of primary exophthalmic goitre. Jaboulay, in some cases of primary exophthalmic goitre, performs a bilateral division of both cervical sympathetic nerve trunks. In other cases of the primary form of this disease he performs a bilateral resection of both nerve trunks. Jonnesco, in the primary forms of this affection, performs a complete resection of both cervical sympathetic trunks, including the upper, the middle and the lower cervical ganglia. The value of these operative procedures has been much contested. The uniformly good results obtained by their originators have not been obtained, nor even been approached, by other equally dextrous and competent operators. Operations on the sympathetic for the relief of the primary forms of exophthalmic goitre have fallen almost into complete disuse, not on account of any difficulty of execution, but because of their therapeutic inefficiency. They have never been advised for the secondary forms of the affection.

Boisson (*Thèse de Paris*) collected all the case of exophthalmic goitre that he could obtain up to 1898, for the relief of which an operation on the sympathetic nerve or ganglia had been performed. He collected 27 cases and analyzed 23, as the other four, for one reason or another, prove nothing. In these cases, there were three complete cures, eight marked improvements and three deaths. His conclusions are: "Successes are rare. In cases benefited, it is sometimes one symptom, sometimes another, which is improved; and the improvement is sometimes immediate, sometimes late, sometimes there are relapses in the improvement. Neither by division nor excision, total or partial, have more brilliant results been obtained. From the physiological point of view, all is chaos. There is no relation between the phenomena noted by the surgeons and those observed by the physiologists. The surgical effects are also in discord with one another." Schiff, in his experiments, noted that no effects on the thyroid gland followed the section of the sympathetic cervical nerves.

So many observers have examined the cervical ganglia in this disease that it is quite impossible to refer to them all. In a certain number of cases, lesions of the sympathetic nerve have been reported. The changes were such as are often found in many other diseases,

such as are often found in health. Abadie, one of the most ardent advocates of the sympathetic theory, says: "The nervous sympathetic trunk is neither diseased nor degenerated; its tissue is *intact* and does not show any lesion." However, he gives no detailed report of observations. Hale White⁹ has shown, by a careful series of investigations on patients dying from other causes, that variations in the size and in the vascularity of the cervical sympathetic ganglia, as observed by the naked eye, have no significance; that the cellular elements are found in such various degrees of number and integrity, and that the fibrous struma is so variable as to prevent any definite statement. He further says: "This evidence (his observations and those of others) seems to me conclusively to show that the lesion is not in the sympathetic nerves."

The only recent observer that has found positive changes in the sympathetic cervical ganglia is Greenfield.¹⁰ The changes which he noted are not characteristic. In two cases examined, he found these ganglia to be swollen, markedly *hyperaemic* and infiltrated with leucocytes. Degenerative changes in the ganglion cells were present. Ehrich¹¹ is of the opinion that what degenerative changes have been found in the sympathetic nerve are purely secondary. The only changes which he found were vacuolation and fat droplets. In Temoin's case,¹² microscopical examination of the sympathetic cervical ganglia showed nothing definite. Numerous observers of great competence and acuity of observation report negative findings. Achard and Joffroy examined the cervical sympathetic ganglions in four cases of exophthalmic goitre and found them absolutely normal. Ranvier examined one case; his findings were the same. The observations of Marie and Marinesco, of Mendel, of Joffroy and Achard, taken in connection with those of Wilks, of Barth and of Déjerine, suffice to convince one that exophthalmic goitre is not due to organic disease of the sympathetic nervous system.

If we assume that this disease is dependent on a functional involvement of the cervical sympathetic trunk and its ganglia, we could not satisfactorily explain why in the same nerve trunk there is a stimulation of some fibers, depression of others and functional integrity of the remaining fibers. Dilatation of

the pupil, which is perhaps the most constant symptom of stimulation of the cervical sympathetic nerve, is notably absent in Graves' disease. The fact that there are no invariable ocular or pupillary symptoms or signs further argues against the primary involvement of the sympathetic as being the cause.

(d) *The Nervous Theory.*—This is supported by Sattler, Putnam, Mendel, etc. Owing to the apparent sudden onset of exophthalmic goitre, to its frequent occurrence in individuals of the same families—be they ascendants, descendants or collaterals; owing to its far more frequent occurrence in women, and to the fact that the sufferers of this affection frequently belong to neuropathic families in which cases of epilepsy, hysteria, chorea, or even some form of insanity have occurred; owing to its frequent association with nervous affections of a functional or organic nature, such as hysteria, neurasthenia, tabes dorsalis, syringo myelia, epilepsy, etc., and also to the many nervous manifestations of this disease, such as tremor, general nervousness, mental disturbances, paresis and paralysis, etc., these patients are almost invariably nervous, capricious, hysterical and poor sleepers. Many clinicians have been led to believe that this affection is dependent upon either a functional or an organic disease of the cerebro-spinal nervous system. If we consider this affection a neurosis—that is, a nervous disease having no demonstrated organic basis—we will have to classify it among such functional nervous diseases as hysteria, chorea, neurasthenia, etc. We cannot so consider it, as we know that this disease is always associated with definite histological changes in an organ not belonging to the nervous system. As to its being a nervous disease with appreciable anatomical lesions in the nervous system, we now will submit the evidence for and against this contention.

Edmunds, W.,¹³ and other investigators, have found that the nerve lesions of exophthalmic goitre are extremely uncertain. One observer has found one change; one another. And when, in the case of Graves' disease, a systematic examination of the nervous system has been made, the findings have usually been negative. In those cases where changes in the nervous system existed the lesions found vary con-

siderably in the different cases, though definite enough in itself in each case. The lesions are inconstant, are not characteristic. We acknowledge that many of the symptoms clearly show that the normal functions of the nervous system are deranged, but similar disturbances occur in other toxæmic states, in other intoxications; and in the absence of constant organic changes in some part of the nervous system they cannot be adduced as evidence of a nervous cause of the disease. No constant change in the peripheral nervous system has been noted. Mueller and several other observers have occasionally found changes in the pneumogastric and recurrent nerves—a few degenerate fibres being present in these nerves. As a rule, however, these nerves have been found normal. Mueller decided that the degenerative changes in the vagus nerve were secondary. Sir Victor Horsley noted in his experiments that the division of the recurrent laryngeal nerves was without effect upon the thyroid gland.

In those cases where the disease has co-existed with an organic disease of the spinal cord, such as tabes dorsalis, at the post-mortem table, there will be found the anatomical changes characteristic of that organic disease. In cases of exophthalmic goitre not complicated by an organic spinal cord disease, there is noted in the spinal cord a total absence of demonstrable anatomical changes. Greenfield believes that he noted in some cases that came to autopsy changes similar in nature, but less marked in degree, to those which are noted in tetanus and hydrophobia. Most observers, however, have noted no change other than slight degrees of congestion, and even this slight degree of congestion was present in only a few instances.

As to the brain, Eger noted in one case adhesions of the dura mater over the convexity. Peter, in another case, found a large hemorrhagic focus in the pons and medulla. Vandervelder and Le Boeuf report having found a vascular neuro-sarcoma beneath the gray matter of the left superior parietal convolution. We must bear in mind that these findings are isolated findings; they are exceptional occurrences; they are coincidences. In almost all of the cases that have come to the autopsy table the brain and its membranes

were not the seat of changes detectable with our present methods of examination.

Filehne, in experimenting on rabbits, found that when he transected the restiform bodies at different levels, he was able to produce tachycardia, exophthalmos, and occasionally the autopsies showed swelling of the thyroid gland. Bienfait partially confirmed these results in 37 per cent. of his cases.

Tedeschi, as a result of experiments personally conducted, came to the following conclusions:

1. That in rabbits injuries to the restiform bodies artificially produce exophthalmic goitre.

2. In animals thus affected, when the symptoms have disappeared, they can be reawakened in part by hyperthyroidization.

3. In animals in which the thyroid body has been removed, lesions of the restiform bodies do not produce exophthalmic goitre.

4. In animals in which the exophthalmic goitre symptom-complex has been produced by loss of the restiform bodies, removal of the thyroid gland diminishes or completely banishes the greater part of the symptoms. These experiments prove the ultimate relation existing between the secretion of the thyroid body and this disease, and show that partial thyroidectomy has a beneficial influence upon the experimentally produced disease.

The objections to considering atrophy or degenerative changes in the restiform body as being the cause of the disease under discussion, are many. Atrophy of the restiform bodies has been found in cases of tabes dorsalis, in which symptoms of exophthalmic goitre were not present.—(Oppenheim²). Lesions of the restiform bodies would not explain the partial paraplegia; would not explain the muscular atrophy, the absent or diminished patellar reflex, etc. Joffroy and Archard¹⁴ were unable in their experiments on animals to reproduce the symptoms of Graves' disease by provoking injuries of the bulb. "That lesions of the restiform bodies are quite exceptional is evidenced by the fact that in sixteen cases reported by recent observers (Joffroy, Siemerling, Koepen, Goldscheider, Mueller, Achard), the restiform bodies are described as absolutely normal."—(Francis P. Kinnicutt²).

We see, by all that precedes, that exophthalmic goitre is not due to a constant and charac-

teristic nervous lesion, demonstrable in every case. Post-mortem observations teach us that in most cases of this disease there is a total absence of anatomical lesions in the cerebro-spinal and sympathetic nervous system—that is, of such lesions as can be revealed by our present methods of examination.

(e) *Parathyroid Theory*.—Not much is known concerning these bodies. A great deal of speculation concerning their functions, and also concerning the results of pathological changes in them, has been indulged in. They are four in number, two on each side. They contain no follicles, no colloid substance and are composed of epithelial cells. According to Segale (*Archivo per le Scienze Mediche*, Turin, 1907), after total parathyroidectomy, such profound disturbance of the metabolism occurs that all effort on the part of the organism to repair are absolutely ineffectual. It has been suggested by some (Edmunds, MacCallum) that exophthalmic goitre might be dependent upon the absence of the glandulæ parathyroidæ, or upon functional or structural disturbances present in one or more of them. We cannot, for the time being, adopt the parathyroid theory as a working basis, because—

1. Our knowledge concerning the physiology and the pathology of these glands is as yet too limited.

2. Parathyroid therapy is useless in this affection. Walsh¹⁵ came to the conclusion that there are no grounds for the idea that parathyroid insufficiency plays an important part in Graves' disease.

3. The changes that have been found in some parathyroid bodies from exophthalmic goitre patients have also been noted by Walsh, Humphrey, Berkeley and MacCallum after death from other diseases.

4. In nine cases of exophthalmic goitre in which the parathyroid bodies were examined microscopically by MacCallum,¹⁶ they were found practically normal, there being at most, in a few cases, only a light *diminution* in size and an increase in the fibrous stroma.

Shattuck examined microscopically parathyroids obtained from exophthalmic goitre patients. He found nothing abnormal in them. Benjamins¹⁷ examined the glandulæ parathyroidea in sixteen simple, and three Basedow's goitres, without finding any noteworthy change.

"I have had opportunity to examine about 100 presumably normal parathyroids collected by Dr. D. Ferguson and Dr. Rogers in this laboratory (Cornell Univ. Med. Dept.), and find that the variations in structure of the glands, and in the integrity of the cells, cover a range rather greater than that reported by most observers, and quite as extensive as that so far observed in Graves' disease."—(Ewing).

(f) *Thymus Theory*.—This theory, as an explanation of exophthalmic goitre, was suggested by the following facts:

1. In some of the cases of exophthalmic goitre that have come to the autopsy table, the thymus gland was found to be hypertrophied. Dinkler, Joffroy, Soupault,¹⁸ Mobius, Spencer, Marie and other authors have commented upon this marked hypertrophy, and have noticed that it is most always associated with great vascularity of the organ.

2. Some cases, apparently, have been benefited by the use of thymus gland substance, or of some of its preparations.

Our non-acceptance of this theory is based upon the following facts:

1. Our knowledge of the physiology and pathology of the thymus gland is as yet too limited. Very little is known concerning the functions of this organ.

2. Thymus therapy, in the opinion of by far the greater number of clinicians, is useless in the treatment of exophthalmic goitre.

3. Exophthalmic goitre occurs in the absence of hypertrophy of the thymus.

4. Hypertrophy of the thymus occurs in the absence of exophthalmic goitre.

5. The thyroid theory offers a far better working theory.

MacKenzie states that he treated twenty cases of this disease with thymus extract, and compared them with twenty similar cases treated without thymus, but could see no decided difference in the results obtained.

(g) *Thyroid Theory*.—Though it has not been demonstrated beyond scientific contradiction, that, in the thyroid gland, is to be found the sole primary cause of the disease, we are believers in the thyroid theory because

1. There is present some structural alteration of the thyroid body in all cases of exophthalmic goitre. This applies to the secondary as well as to the primary forms of

this disease. Most of the recent observers have come to the conclusion that the histology of the thyroid gland in primary Grave's disease is, in many respects, specific.¹⁹ "We must not conclude, because we cannot detect any enlargement that, therefore, the gland is not diseased; it always is."²⁰

2. Because exophthalmic goitre is the direct opposite of myxœdema in symptomatology, in pathology and in therapeutical indications.

3. Because the symptom-complex of this affection can, to a certain degree, be determined by the ingestion of large doses of thyroid gland substance, or of its various preparations.

4. Because all medical or surgical measures which tend to decrease the functional activity, or lessen the volume of the gland, also tend to lessen the severity of the symptoms or to arrest them. Schultze says: "Clinically, it makes no difference whether the secretion of the gland is increased, or altered, or is altered chemically as the result of changes in the blood, in the alimentary canal, or in the central nervous system, the fact remains that the removal of the growing gland does away with the symptoms, and upon failure to remove the diseased glands depends the failure to cure." Incidentally, we may say that the surest and most efficacious way of reducing the volume of the thyroid body is by removing a portion of it.

5. Because in the cases which we have collected and which we report, recovery from the disease, in rapidity and in completeness, has been in proportion to the extent of gland tissue removed, short of its entirety.

6. In those cases where the symptoms recurred, recurrence was associated with, and seemed to be dependent upon, hypertrophic changes in the remaining portion of the gland. Recovery could be secured by a secondary operation, and was secured in those cases that submitted to a secondary operation.

7. Because the symptom-complex of this affection finds its most satisfactory and its most consistent explanation by considering the condition a general toxæmia, the result of quantitative or of qualitative changes, or both, in the secretion of the thyroid gland. The tachycardia, the mental changes, the sweating, the prostration, the increase of body temperature, the diarrhœa, are all symp-

tom that we find in other intoxications. It is perfectly possible for a gland to show a great hyper-activity without actual enlargement, as for example, the salivary gland in the state of salivation.

(To be Concluded Next Issue.)

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THE TREATMENT OF ACUTE LOBAR PNEUMONIA.

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The more I see and read of croupous pneumonia the more pessimistic I become about its cure, and the more certain I am that we simply don't know anything about curing it. If drugs contributed as little to the cure of all other diseases as they do, in my judgment, to that of acute lobar pneumonia, I would almost have reached the stage of therapeutic nihilism some time ago. The prevalence of the malady in all seasons and climates, and the high death-rate attending it wherever found, gives the subject special interest; with the so-called good treatment, bad treatment and no treatment at all, the mortality remaining practically the same (from 20 to 50 per cent.) is my apology for discussing a subject of which doctors gen-

erally, and I particularly, know so little, in the yet doubtful hope that good may result.

Croupous pneumonia is an acute, infectious, self-limited disease which, in the majority of cases, terminates either in death or recovery in from two to ten or fifteen days, and I, for one, am convinced that it will always be so unless serum therapy comes to our rescue, which, when perfected, may give us a remedy of specific value. Observation and experience with other acute infectious diseases seem to justify the hope that some day we may find in such a therapeutic agent a remedy which will enable us to successfully cope with this terror to humanity.

It has been suggested (and there is reason for believing this to be the correct view) that we have either never discovered the specific germ of this disease, or that there are more than one species of organism responsible for the trouble. If this theory be correct, and it requires a different antitoxin to counteract the poison produced by each organism, it is not hard to account for the difficulty in preparing a serum which will cut short a disease produced by a variety of organisms. Fraenkel's micrococcus lanceolatus, pneumococcus, or diplococcus pneumoniae, is supposed to be the etiological factor in the production of acute lobar pneumonia. Whether or not this is the sole factor we do not know. It is a matter of common knowledge that numerous other organisms are associated with the so-called specific organism of pneumonia in almost every case of the disease, the most common of which is probably the streptococcus pyogenes. With such a variety of organisms present is it not possible that we have failed to locate the true sinner, or certainly all the sinners? Passler says the best results follow the administration of a polyvalent serum prepared after a method devised by Romer. This, if true, strengthens the theory of multiple etiology.

Within the last two or three years we have heard a great deal about the opsonic index theory (yet altogether a theory), and naturally we had hoped that this would help us out of at least a portion of our trouble. So far but little has been added to our knowledge of pneumonia by the study of opsonins. With serum therapy tried and found wanting and but little prospect of anything else derived from the

opsonic index theory, we are left exactly where our forefathers were one hundred years ago.

Until something more definite is known about the treatment of pneumonia, we must treat each case and meet the symptoms as they arise, and if I shall succeed in impressing upon each doctor here the importance of using his own brains and common sense and not follow any routine laid down by some one else in the treatment of croupous pneumonia, the object of my efforts will have been accomplished. Of course, there are certain general principles to be observed in all cases, but each case is separate and distinct, and such remedies as we apply should be used in accordance with this fact.

Rest in bed with all the pure air and sunlight possible—both are greatly to be desired, and remember that you cannot have too much of either—with the room constantly at an even temperature of from 65 to 70 degrees, with remedies to control pain and to make the patient as comfortable as possible are among the measures to be desired in all cases. The kidneys, bowels and skin should be kept active. The physician should see that the stomach is not overloaded nor distended too much. Distention of this organ, from any cause whatever, interferes with the action of the heart. Endeavor to get your patient to sleep as much as possible. Among the numerous drugs that have been used for the characteristic stitch pain, none has proven so useful as the hypodermic use of morphine in sufficient doses. Blisters have able advocates here and alleviate the pain in many cases, but my experience is that you cannot rely on them always to give the relief sought. There are objections to the use of blisters and they are, therefore, condemned by able clinicians. Personally, I use them only in cases of delayed resolution. Bromides, chloral, hyoscyamus, etc are valuable hypnotics and should be prescribed when indicated. The temperature should not be allowed to remain unreasonably high for very long at a time. But for the bad effect of the temperature, *per se*, there is reason to believe that a high temperature is beneficial. We know there is being waged a battle royal between nature and disease and a high temperature is supposed to supply nature with weapons of defense, thereby enabling her to combat the disease.

If this theory is correct, the higher the temperature consistent with the comfort of the patient, the fiercer and shorter is the battle and the greater are the chances for nature to win out.

In croupous pneumonia the circulatory system gives us more trouble than even the inflamed lung itself. Show me a remedy which will keep the heart going indefinitely and I will give you a remedy which will cure practically every case of acute lobar pneumonia, or, more accurately speaking, a remedy which will allow it to cure itself. For the purpose of aiding the heart in its efforts to maintain its equilibrium, various remedies have been used—namely, venesection, aconite, veratrum viride, digitalis, strychnine, ammonia salts, alcohol, etc. All agree that each has a place in the treatment of this malady and the point to be settled in each case is how to use them, when and in what amounts. In the early stages of the disease in a young and robust adult the abstraction of the proper amount of blood in many cases adds greatly to the comfort of the patient and in a few cases possibly saves the patient from impending death. Later in the progress of the disease when the right heart becomes distended and overworked, with the veins of the hands, face and neck full and prominent, the breathing rapid and difficult, and the radial pulse small and wiry, the surface cyanosed, and in addition to this delirium, venesection may save your patient. It certainly is temporarily beneficial; whether or not the loss of blood will be felt later I am not prepared to say. The blood certainly plays an important part in the fight in pneumonia.

It is a well-known fact that the prognosis is far better when there is marked leucocytosis, and there could not be leucocytosis without blood. Until this question is better understood I do not advocate venesection unless the immediate safety of the patient demands it. Aconite and veratrum viride theoretically, at least, bleed the patient in his own veins, and at the same time saves the blood until it is needed. Unfortunately for those of us who practice in rural districts, these drugs cannot with safety be used in the doses which are apt to be of the most benefit unless there is a competent nurse in constant attendance, and she cannot always be had at the right time. Were the patient

willing and able to employ a nurse she cannot always be gotten until after the indications for such drugs is passed. Unless the patient is suffering greatly he often delays calling in his physician, and by the time the doctor gets there and makes his diagnosis and then sends to the city for, and gets, the nurse, there is no longer any indication for such drugs. Digitalis is probably safer than either aconite or veratrum viride, but this is by no means safe to give indiscriminately. I prescribe it but never am satisfied to give it in such doses from which you should expect the best results.

Recently massive doses of sulphate of quinine and tincture of chloride iron have been highly extolled in the treatment of this disease. Several hundred cases have been collected by the advocates of this method of treating croupous pneumonia in which they claim there has been a mortality of less than 3 per cent. I have adopted this treatment in a majority of the cases which I have treated for the last year, and certainly the mortality has been no higher than with other methods. From 30 to 140 grs. quinine per day and from 15 to 30 drops tr. iron every two or three hours is recommended as best. This method has not been sufficiently tested to give it a permanent place in the treatment of acute pneumonia, but I can see no harm in the drugs—both having long been given in all septic troubles. Empirically, it is true, but nevertheless to advantage, I shall continue to use them until convinced of their bad effect.

Ammonia has for a long while been regarded as a valuable drug in the treatment of this disease in its second stage. Strychnine is given to advantage after the stage of active congestion has passed and the pulse begins to weaken. Patients stand large doses well and small doses are of very little value.

Within the past few years there have been conflicting views in the profession regarding the value of alcohol, which for so long was relied upon as the sheet-anchor in the treatment of this trouble. Some one wiser than I must settle the dispute. No one, so far as I know, denies its value as a sedative.

I have purposely avoided discussing the complications which may arise. The indications should be met and treated accordingly.

I realize that this imperfect paper is not

encouraging to those of us who expect to suffer from acute pneumonia nor to all of us who are to treat it; nor is it pleasing to us as members of a profession which prides itself upon the rapid strides it has made in so many directions. But facts are facts, and we had just as well face them squarely.

ECTOPIC GESTATION—REPORT OF A CASE.

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Ectopic gestation consists in the development of the ovum external to the uterine mucous membrane, and the variety that I desire to report is that commonly known as secondary abdominal pregnancy—primarily tubal.

History.—On October 29, 1907, Mrs. T., of Ohio, married, aged thirty-six, was admitted to the Hygeia Hospital in a much distressed condition. While traveling she was taken suddenly ill with an intense pain in the lower abdomen, most marked on the right side. Shock was severe and she became faint, being unable to travel. Her journey had to be discontinued, as this condition lasted several days. She had missed her period three months, or thereabouts, and regarded herself pregnant. After slowly recovering from the shock and pain, there was no special trouble for several months, when she noticed an enlargement in the right lower abdomen. She consulted a physician who treated her for some time for an abdominal tumor.

Examination. Temperature was one hundred and two degrees, respiration hurried pulse quick and feeble. Her face was flushed and she had an anxious expression. The abdomen was large, non-symmetrical and sensitive, particularly over the right lower portion. She often vomited after taking food.

Pelvic Examination.—This examination revealed a large and hard globular mass very low in the right iliac fossa; uterus was high in the pelvis, slightly enlarged, soft to the feel, and dilated so that the index finger could be easily carried to the internal os.

Sexual History.—She menstruated early, and was normal in this respect during her single life. She married about eighteen years of age, and had four children at term, no miscarriages, and her labors were normal. She never had any specific disease.

Prognosis.—Very unfavorable.

Treatment.—Operation was performed two days after she was admitted, and upon opening the abdomen in the middle line between the umbilicus and the pubis, it was found that the peritoneum was strongly adherent to what proved to be the placenta, which, though gently handled, gave way, and was instantly followed by the most profuse outpouring of blood that I have ever witnessed from the abdominal cavity. The child, a large monster, in the seventh and a half months of life, was as quickly as possible delivered, the cord cut short and the cavity packed with gauze that had been steeped in hot water. The hemorrhage soon ceased and the incision was dressed as an open wound. The shock, however, was so profound that the mother never reacted, dying about four hours after the operation.

The placenta was strongly adherent to the peritoneum and intestines. During the operation normal salt solution at a temperature of one hundred and ten degrees was kept constantly flowing into her vessels by hypodermoclysis, and other cardiac stimulants were used hypodermatically, but to no avail.

Remarks.—My rule has been to operate by the abdominal route whenever this condition is diagnosed, or even strongly suspected, regardless of the placental bruit, or of the period of pregnancy, believing that the dangers dependent on a continuation of an abdominal gestation make it unwise to delay the operation until the fetus dies that the placental circulation may become obliterated.

SUMMARY.

1. This was the fifth conception.
2. Only two years since patient was delivered of last child.
3. Patient had never had symptoms of infectious or inflammatory disease of any of the pelvic organs.
4. Never had subjective symptoms of pregnancy prior to the fifth month.
5. The menstrual period was delayed as in a normal pregnancy.
6. Rupture occurred into the peritoneal cavity, and notwithstanding patient had no treatment at the time, mother and child both lived.
7. The appearance of physical signs in this case must have been very late.
8. She had passed the seventh and a half

month of her gestation with a large living child in the peritoneal cavity.

TREAT THE PATIENT—ELIMINATE TOXINS.

By JAMES BURKE, M. D., Manitowoc, Wis.

Twenty-five years ago, the lamented J. Adams Allen used to refer to the empiricism of medical practice by asking: "What is good for measles?" And then summarily launch out in his lecture to castigate the practice of treating coughs, neuralgia, vomiting of pregnancy, etc., with some fixed formula till it utterly failed, and then bobbing over to some equally creditable formula till discredited. In this connection he told us to treat the patient and not the disease.

We now deem it necessary to diagnose the metabolic changes in the patient, as a result of the disturbed physiology of his body; through symptoms and physical and chemical examination, we determine the blood contents and their needs.

The initial physiologic failure is discovered and its immediate and remote influence on metabolism is corrected. Vicious habits and other detrimentally acting causes must cease in order to successfully restore the sick body to normal conditions.

In either acute or chronic forms of disease, the alimentary canal must be set right by clearing out the lumen of the bowels with a saline (sodium salts preferred). Calomel, jalapin, colocynthin or any other so-called cathartic vegetable principle should never be used for this purpose.

These principles should be given only in small, frequently repeated doses, to neutralize toxins in the blood, for which they have a chemical affinity. The proper therapeutic use of juglandin, leptandrin, iridin and jalapin is to neutralize in the blood incomplete nerve waste. The elimination of the surplus nerve toxins by these principles stimulates all the excretory organs by supplying a normal incitant to them—a normal product for excretion through that channel. By such manner of administration, these active principles are sudorifics, diuretics and bowel evacnants. Without normal excretory material, the function of an excretory organ becomes "torpid."

No fixed medical formula will restore all

coughing individuals to health; the dominant disturbing toxin in every case must be considered as to cause and effect; the cause must be eliminated; the present status of the tissues involved must be relieved by chemically saturating the disturbing toxins with the proper principles in frequent, minimum doses till symptoms indicate a cessation of action of the disturbers. It is seldom that two patients have the same initial cause for the physiologic disturbance which caused the cough, nor the same dominating toxin irritating the bronchial tissues.

In many cases of winter cough, rational treatment of the rheumatic diathesis is the successful therapeutic procedure; in other patients, employment conditions, such as working where dust or irritating fumes are being constantly inhaled. A third patient may, by habitual indulgence in alcoholic drink, render the quality of his digestive ferments such as to make it impossible for his digestive tract to revert his proteid food into the normal variety of amino-acids, a protein, which, alone, is capable of being transmuted into normal human tissues. The contents of his blood are incapable of regenerating normal tissues in his body; his having the "liquor cough" but indicates a thickened fibrous consistence of the capillaries of the bronchial arteries, and the mucous lining of the air cells; studded, swollen bronchial glands.

The absorption of toxins from such a patient's bowels is to be expected; the tissues of other organs, not yet crying for medical aid, are necessarily in an abnormal status. With the treatment of these, as well as other drug fiends, science is sorely tried.

Suspension of the drug, regeneration of artificial tissue throughout the body, disposition of the numerous toxins permeating the tissues and re-establishment of a relatively normal physiology for the patient are problems very difficult to solve.

The rational sedative for any cough is the proteid principle affinitive for the dominant disturbing toxin, by which the two poisons become one benevolent compound.

Sedation of nerves is the neutralization of toxins.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.
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[LECTURE XLV.]

**Gangrene (Continued)—Microbic Gangrene—
Senile Gangrene—Diabetic Gangrene—
Decubitus Gangrene—X-Ray Gangrene—
Carbolic Acid Gangrene—Noma—Hospital
Gangrene.**

MICROBIC GANGRENE.

Microbic gangrene is a virulent moist gangrene due to infection with certain aerogenic bacteria. It is sometimes spoken of as progressive gangrene, traumatic gangrene, emphysematous gangrene, or malignant edema. It is characterized by rapid extension, by the formation of gas in the dead tissue, and by constitutional symptoms of acute sepsis. It is due to the combination of trauma and infection. The injuries are usually those which open up large areas of connective tissue, such as a mutilating railroad accident, compound fracture or an operation for radical removal of the breast. It may follow, however, trivial abrasions or even a needle puncture. The micro-organism usually found associated with the disease is the *bacillus aerogenes capsulatus*, although other germs have been isolated.

The symptoms of this form of gangrene usually develop in a few hours. There is often a chill, followed by rapid failure of the pulse, irregular respiration and cold extremities. The patient is irritable and anxious, soon becomes delirious, and then goes into a stupor. The local symptoms consist in swelling and a dusky redness about the wound, the adjacent skin soon becoming brownish, then green, and finally black. Blebs form, containing foul and bloody fluid; the gangrene progresses rapidly, often extending in finger-like prolongations. Red lines mark the course of the lymphatics and the lymph nodes enlarge. If an incision is made, there is escape of offensive fluid, and gas will bubble through the opening. The odor is horrible. The mortality is stated at about 55 per cent.

Treatment.—An ounce of prevention is worth a pound of cure. The condition should be guarded against by thorough disinfection

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

of accidental wounds and the application of the recognized rules of asepsis in surgical work. When progressive gangrene does develop the only chance for the patient's life consists in an early amputation, if the part involved be an extremity, or in multiple free incisions, followed by copious antiseptic irrigations and moist dressings if the disease be so located that it cannot be radically removed. No time should be lost in waiting for the line of demarcation in an extremity, but an amputation done as soon as the condition is recognized, the incision being made as far as possible from the diseased tissue. The flaps should be brought loosely together with abundant provision for drainage. In progressive gangrene of the trunk the incision should be made freely, not only through gangrenous tissue, but through adjacent structures. It has been suggested that irrigation with solutions of peroxide of hydrogen or permanganate of potash be practiced, owing to the effect of the nascent oxygen in these substances on anærobic bacteria.

SENILE GANGRENE.

Senile gangrene is a form of dry gangrene occurring in old people, usually beginning in the toes and involving the foot and leg, but sometimes seen in the upper extremity. It is due to degenerative changes in the arteries, causing diminution of their lumen, and finally complete obstruction by thrombosis. Arteriosclerosis was at one time thought to be characteristic of old age, but it is now known that it often occurs in early or middle life. The French have a saying that a man is as old as he feels; the English paraphrase it by saying that a man is as old as his arteries. Work, worry, venery and whiskey often cause premature senility and as a result we sometimes see senile gangrene in a man of forty.

The premonitory symptoms consist in coldness, numbness and a tingling sensation in the foot, the patient stating that he feels as if his shoe was stuffed with cotton. The skin is bluish and mottled and the pulsation in the large arteries weak or absent. There is frequently a cramp in the leg, due to anemia of the muscles, and this may cause a characteristic limp. When senile gangrene actually develops it usually begins on the great toe at the site of some trifling lesion; the skin becomes red, purple and then black in color; the toe becomes

shriveled and hard—in other words, mummification takes place. The gangrene slowly extends to the base of the toe, and may involve the foot or the leg itself. There is usually spontaneous arrest and the formation of a line of demarcation. Unless infection occurs, there are practically no constitutional symptoms.

Treatment.—The prophylactic treatment consists in giving the part complete rest, in favoring collateral circulation by elevating the limb and keeping it warm, and in stimulating the circulation by electricity, hot and cold douches and gentle massage. It is also important to disinfect the skin to prevent infection should death ensue. When senile gangrene develops the necrotic tissue should be kept well dusted with iodoform or some other antiseptic powder, and the patient's general health sustained by stimulants, food and tonics, until Nature indicates the site of amputation. To operate too soon means unnecessary loss of limb, while to wait too long invites infection and disastrous results. In favorable cases an amputation may be performed through the line of demarcation with a few snips of a pair of scissors. Should the disease continue to advance, or septic symptoms develop, a prompt amputation should be performed at the lower third of the thigh.

DIABETIC GANGRENE.

Diabetic gangrene is a form of gangrene which often develops spontaneously or after trifling injury or operation in diabetic patients. It has long been observed by clinicians that furuncles, carbuncles and gangrenous inflammations are frequent complications of diabetes. It was at first thought that this was directly due to the presence of sugar in the blood. It is now believed that the sugar is only an indirect cause, favoring the development of arteriosclerosis, and predisposing to bacterial infection. Whatever theory is accepted, the practical fact remains that patients with diabetes easily develop gangrene of the progressive variety which can only be controlled by measures which eliminate sugar from the blood.

The symptoms of this type of gangrene are not marked by any peculiarities, consisting simply in the death of tissue, which may undergo mummification, or may soften, putrefy and break down. The progress at first is usually slow, but it is steady and persistent,

and may at any time become rapid. The constitutional symptoms vary with the nature of the case, and are added to those of diabetes.

Treatment.—A patient known to be the victim of diabetes should be actively treated for this disease. Every individual who develops gangrene should have the urine examined to see if it contains sugar. Before an operation, the urine of the patient should be examined for sugar, whether he is suspected of having diabetes or not. If sugar is found, the operation should be postponed until it disappears or is reduced to a minimum. When diabetic gangrene develops it is best not to operate until the patient has, for some days, been on a strict anti-diabetic diet. Occasionally the urgency of the case is such that an immediate operation has to be done, but almost invariably there will be a recurrence of gangrene in the tissue about the incision. By a rigid diet, from which all starches and sugars are excluded, the vitality of the tissues is greatly improved, until finally a point is reached at which resistance is sufficient to check the advance of the gangrene. The line of demarcation then forms, and the operation may be performed with fair assurance of satisfactory repair, provided the most rigid aseptic precautions are observed, and active treatment of the constitutional disease is kept up.

DECUBITUS GANGRENE.

Decubitus gangrene is a form of the affection seen during the course of protracted exhausting illness, due to compression of the soft tissues between the mattress on the one hand and the bony skeleton on the other. The necrosis usually develops over the sacrum, trochanters, shoulder blades or heels, and is commonly termed a bed-sore. The condition is especially likely to occur in the victims of continued fevers attended by emaciation, such as typhoid, is sure to develop after trophic diseases or injuries to the spine, and is common in patients suffering with diabetes or nephritis. The primary cause is pressure and the resulting ischemia, to which is later added infection, resulting in inflammation and ulceration.

The symptoms are a tingling sensation, followed by a dusky redness of the skin, which later becomes purplish and finally black. A slough forms, which separates, leaving a ragged ulcer. This may remain small in size, but

often extends rapidly in circumference and depth. Frequently bone is exposed, and if on the sacral region, the spinal canal may be opened and death result from an ascending meningitis.

Treatment.—Prophylaxis is all important, and consists in keeping the skin clean, dry and free from long-continued pressure. No patient should be allowed to remain in one position more than three hours. Sheets should be kept free from wrinkles and changed often. Bed-crumbs should be promptly removed, and maceration of skin from contamination with urine and feces should be prevented. The patient should receive regular sponge baths, and the back should be rubbed with alcohol, thoroughly dried, and dusted with talcum or zinc stearate powder. When necrosis of the skin threatens, pressure must be removed by the use of fenestrated rubber cushions or by rings made with cotton; in bad cases an air or water bed should be employed. When gangrene actually occurs the slough should be clipped away, and the sore disinfected with antiseptic solutions. It should then be treated either with dusting powders, moist antiseptic dressings, or a mixture of carbolic acid, balsam of Peru and castor oil, as previously outlined in the *lectura* upon the treatment of alceration.

GANGRENE FROM ERGOT.

This type of gangrene may be due to the intentional long-continued administration of ergot, but is commonly seen as a result of eating bread made from "spurred rye." An epidemic occurred in 1816, in France, and upon investigation it was found that the bread used by the peasants contained 10 per cent. of ergot. The action of the drug is through the vaso-motor system, producing tonic spasm of the muscular coat of the arteries, thus diminishing their lumen and lessening the quantity of blood conveyed to the tissues to which they are distributed.

The symptoms consist in digestive disturbances, such as vomiting, diarrhoea and abdominal pain, followed by dizziness, headache, disorders of vision and terminating in tingling, numbness, coldness and cyanosis of the extremities. Finally there is gangrene, usually beginning in the fingers or toes. It is of the dry variety, progresses slowly, and usually ter-

minates by the formation of a line of demarcation.

The treatment consists in immediate withdrawal of the drug and dealing with the local condition practically as in the case of senile gangrene.

GANGRENE FROM FROST-BITE.

The general symptoms produced by cold consist in a lassitude and intense desire to sleep, which often forces the individual, against his judgment, to lie down and rest. The local symptoms consist in stimulation of the circulation, causing redness, which is soon followed by a spasm of the arteries, with a resulting anemia and pallor of the skin. There is often severe pain, but this disappears when the part becomes actually frozen. Swelling soon occurs, the tissues fill with venous blood and blisters form. When these break, necrotic tissue is seen at their bases. If the frost-bite is not severe, complete recovery usually takes place. Sometimes damage to the blood vessels results in disfiguring hyperemia, and occasionally discolored and sensitive patches, known as chilblains, will be seen. When freezing is more severe, gangrene results, and a toe, finger or entire limb may be lost. Unless there be infection, a line of demarcation forms and the dead tissue will separate spontaneously, leaving an ulcerated surface which heals slowly. Gangrene from cold closely resembles senile gangrene, although it develops more rapidly.

Treatment.—A person insensible from cold should not be suddenly put into a warm room, owing to the danger of congestion of internal organs. Clothing should be removed and the body rubbed, first, with cold wet cloths, then with bare hands, and finally external heat and internal stimulants cautiously used. Efforts at resuscitation should not be abandoned, even though there be no response for several hours.

The local treatment applied to a frozen part is to rub it with snow or with cloths wrung out of ice water, then with the bare hands, and finally, when there is evidence of returning circulation, cover the part with absorbent cotton and allow it to become warm through the heat of the body. When gangrene develops, amputation, as a rule, should not be performed till the line of demarcation forms. In the case of chronic lesions, such as chilblains, relief from symptoms has been secured by baking the

part affected in hot-air ovens or treating by artificial hyperemia according to Bier's method.

CARBOLIC ACID GANGRENE.

Patients treated with moist carbolic dressings, and surgeons and nurses, whose occupation brings them in contact with the drug not infrequently develop gangrene. Strong carbolic acid solutions are apparently less likely to cause the trouble than are weaker ones, since by concentrated acid there is produced a superficial necrosis which prevents absorption. The drug acts either by stimulating the vaso-motor nerves, causing contraction of the arterioles, or by direct chemical action upon the tissue.

The symptoms are, first, a tingling and numbness, with, later, loss of sensation; the skin at first is white and afterwards becomes yellow, gray and black. Finally the toe or finger becomes hard, shrivelled and gangrenous.

Treatment.—To prevent the possibility of the occurrence of this form of gangrene, do not indiscriminately use carbolic acid solutions, but employ less dangerous antiseptics. If a burn is accidentally inflicted by carbolic acid, immediately neutralize it by the application of alcohol. When only the skin is gangrenous, the part may be ultimately restored by grafting. If the entire extremity is dead, amputation is necessary, although it may usually be delayed until the line of demarcation forms.

NOMA OR CANCRUM ORIS.

This is a rare form of gangrene, occurring in children from three to ten years of age, who have been subjected to bad hygienic conditions and recently suffered some long and debilitating illness. It usually begins as a livid spot on the inner side of the cheek, the discoloration soon showing on the skin of the face. The area rapidly becomes necrotic and an opening develops into the mouth, through which foul and offensive discharge takes place. The process may extend to the gums, causing loss of teeth, or to the maxilla, causing necrosis of bone. The general symptoms are those of grave sepsis. The prognosis is bad, 75 per cent. of cases being fatal within a week or ten days.

Treatment.—The mouth of children suffering from debilitating illness, especially measles, should be kept scrupulously clean, and an ulcer, if detected, should be thoroughly cauterized with nitrate of silver or carbolic acid. If gangrene develops the entire area should be re-

moved with the knife or actual cautery. If recovery follows the resulting defect can be corrected by a plastic operation.

HOSPITAL GANGRENE.

Hospital gangrene was once a frequent complication after accidental or intentional wounds, but has now been completely banished from surgical practice by the use of aseptic and antiseptic measures. It was unquestionably due to infection, but the germ has never been isolated, as the modern bacteriologist has had no chance to study the disease. The last serious epidemic, and the one usually referred to in text-books, occurred in 1863, among the Union soldiers in the Confederate prison at Andersonville, Ga.. At this point 35,000 men were confined under most horrible hygienic surroundings. Small injuries received, such as wounds from splinters, blisters from the rays of the sun, or even scratches from finger nails or bites of insects, were followed by extensive, and often fatal, gangrene. It was impossible to separate the well from the infected, and in one month the death roll amounted to 3,000 men. At the close of the war the Federal Government captured the commanding officer of the prison, tried him by court-martial and executed him. Recently a camp of Confederate Veterans has erected a monument, with an inscription vindicating his memory. There is no question of the fact that the local conditions were so bad as to defy description. There is, however, question as to who was responsible—the Confederate Government, which did not have the means or supplies to correct the evil, or the Federal Government, which was petitioned to either exchange prisoners or else to send drugs, dressings and provisions, to be dispensed under the personal supervision of their own medical officers, and which declined to accept either proposition.

Hospital gangrene occurred usually in one of two forms:

1. The Ulcerative Form.—The wound becomes unhealthy in appearance and the seat of light gray and dark-red patches. These would soon break down, run together and form an ulcer. The skin became disintegrated and the edges of the wound appeared as if they had been bitten out. The surface was discolored and of a brownish hue, and the discharge thin, streaked with blood, and of a foul odor.

2. The Pulpy Form.—In this form the wound became enormously swollen and changed into a dirty gray or greenish mass of putrefying, sponge-like tissue. The edges of the wound would be raised, everted, and of a deep red or purple hue. The swollen membrane soon began to putrefy, but would not readily separate. There was a discharge of gas and sanious fluid, with separation of gelatinous sloughs.

In both forms, as the infection advanced, no tissues were spared. Muscles and fascia were eaten away, articulation opened, and bones became necrotic. Finally a large vessel was reached and profuse hemorrhage occurred. The mortality was from 18 to 80 per cent.

The treatment consists in hygienic measures to prevent the occurrence of the disease, and in the isolation and heroic disinfection of such cases as develop. Cauterization with nitric acid or the hot iron, irrigation of the wound with peroxide, and subsequent dressing with iodoform or other antiseptics, coupled with stimulants, tonics, good food and abundance of fresh air, give the best chance for recovery.

Correspondence.

Medical Legislative Mistakes—Past, Present, and How to Avoid Them in the Future.

Mr. Editor:—Until recently it was thought best to ignore reference to the recent legislative endeavor to secure the repeal of State License Taxes on Virginia doctors till the report of the Legislative Committee to the Medical Society of Virginia at the next meeting; but the urgent solicitations of friends, on account of the disposition of a very few not in full sympathy with the Society's policy, to keep alive erroneous impressions, demands a breaking of the silence.

After several years of varied experience in the work, the Legislative Committee at the Chase City meeting, recognizing the ineffectiveness of divided forces, suggested to the chief officer of the Board of Health (the Secretary) that a harmonious plan of procedure be adopted before the Legislature with proposed bills by the Board of Health and the Medical Society of Virginia. To this suggestion, the Secretary replied that the Society had nothing to do with Board of Health bills; that

the latter would take care of its own and the Society its legislative affairs. The *Bulletin* of the Board of Health confesses in the last issue that the bill proposed by the Board of Health and put before the Legislature "was allowed to die on the Calendar of the House"—was never dignified by a vote in either House or Senate. This admitted fact, coupled with the defeat of the Repeal Bill (the license tax) by a narrow margin, in the House of Delegates, after it had passed the Senate, is conclusive evidence that the *first mistake* of dividing forces in the medical profession ought to have been avoided.

There were but few, if any, members of either House or Senate, who did not admit for nearly half of the session of the Legislature that the Repeal Bill would become a law. The Chairman of the Finance Committee of the House, who has always opposed the bill, and the Delegate from Chesterfield, who has voted both for and against it, with one Delegate from the city of Richmond, recognizing the division in the medical profession, in and near Richmond only, put quietly forward a politician's Board of Health Bill—the "Baker Bill"—and set up the cry that both a Board of Health Bill, with adequate appropriation, and the Repeal Bill could not pass. (It is only fair to state that fully 90 per cent. of the doctors of Richmond stood loyal to the Repeal Bill.)

The *second* mistake was made by a few influential doctors in Richmond, by getting rattled at the above decoy cry—a political play of old and shrewd politicians. It was of little or no effect on legislators, but far more alarming to physicians especially interested than was ever dreamed of by those opposed to the Repeal Bill in the House of Delegates. As a result, there was a division of forces more apparent than ever—forces that ought to have acted as a unit for professional interests as well as for the good of all the people; and from now on those opposed to the Repeal Bill took courage and plied their arts in defeating it and favoring the passage of the "Baker Board of Health Bill." With this threat on the Board of Health appropriation as a big stick, many patriotic doctors in Richmond city were greatly alarmed, and a *third collection of local physicians* came into the legislative field.

Now, the *third* error was made by the Chair-

man of the Legislative Committee, as the result of rush incidental to a large correspondence and the unfortunate complications then so apparent, as follows: The opposition in the House proposed a forty thousand dollar appropriation to the Board of Health, but at the same time pretended that they would defeat, if possible, the appropriation to the Board of Health if the doctors passed the Repeal Bill. This opposition claimed the license tax repealed and the proposed appropriation together would make too large a hole in the State's revenues; therefore, the Chairman of the Legislative Committee, in order to pass both bills, and as a compromise, wrote a few letters to Chesterfield County requesting the doctors to write their representative in the House to "cut down" the appropriation to the Board of Health. It was not the intention to convey the impression to "cut out" the entire amount, but to ask such a reduction as the State's finances would admit of, provided this was based on real conditions. Had this letter been full enough to have conveyed the idea intended, a few local physicians would not have been misled into believing, as they pretended, that the Chairman would sacrifice the Board of Health to pass the Repeal Bill. Nothing could have been further from the truth.

The *fourth* error was made by the Medical Society itself in failing to provide ways and means to keep a representative always present in Richmond during the entire session of the Legislature to watch wavering, side-tracking, substitution, strangulation in committee, and other methods of skilled politicians practiced to defeat bills before that body. Other organizations with large interests at stake do this to guarantee success, and the doctors of Virginia must do it or long battles and many defeats may occur before a final victory is won, since the bill desired affects the State's finances. This is true always—it matters not how meritorious the question—especially in a sixty-days' session under the new Constitution.

During the absence of the Chairman of the Legislative Committee from Richmond, the misconstrued letter to Chesterfield County doctors was seized upon by the "third collection of doctors," referred to above, and was made the excuse for the beginning of the *fifth* mistake—the attempted withdrawal of the Repeal

Bill in favor of the Board of Health appropriation. This move was proposed at first by the above local influences independently of the Executive Committee of the Medical Society. In fact, the circular letter was printed, giving none of the bright prospects of the Repeal Bill, and the postage stamps purchased for mailing them to the profession of Virginia. However, they were never sent out. But now a conjoint meeting of the Legislative Committee of the Society and the Executive Committee was convoked by a telegram from the President of the Society.

On the morning of the day of meeting the sixth *mistake* was made: There appeared in a Richmond daily paper with large headings, *without the name of a physician in the move*, the statement of every fact that was detrimental to the Repeal Bill and none of the favorable features whatever, and the astounding announcement was made that there was a move on foot by prominent doctors of the State to withdraw the Repeal Bill in favor of the Board of Health Bill, or rather the appropriation then "threatened." Neither the Secretary of the Society nor the Chairman of the Legislative Committee, who had just arrived that morning in the city, knew anything of the proposed withdrawal, nor had they any warning of the public attack by physicians through the public press on the Repeal Bill. That blow, struck unawares, was a most unfortunate one; was resented by the profession throughout the entire State, and brought about an acute condition that pleased the advocates of the "Baker Bill" to their liking. Immediately thereafter two lobbyists—one a former Speaker of the House—were continually present in the House, reputed by Delegates to be working against the Repeal Bill.

The *seventh error* was committed by the Executive Committee at this meeting (those present, unfortunately, being mostly from and very near Richmond) in heeding the advice and threats of those in the House of Delegates opposed to the Repeal Bill, listening almost entirely to their statements, echoed here, and ignoring the views of the Secretary of the Society, and the Chairman of the Legislative Committee in their statements of the real sentiment of the legislators, nearly three-fourths of both houses being favorable to the Repeal Bill,

and practically all for any Board of Health Bill reasonable. The two officers of the Society—the Secretary and the Chairman of the Legislative Committee—from extensive correspondence covering the State, and a personal acquaintance and association with legislators before and during the session, were better informed so as to advise the Executive Committee of real conditions and the bright prospects for the success of both the Repeal and Board of Health bills, than anybody else; but these facts presented, with all the earnestness and impressiveness in their power, were discounted, and those opposed to the Repeal Bill were adjudged reliable, and as a result of this meeting, the famous circular letter of the Executive Committee asking the withdrawal of the Repeal Bill was sent out in the name of the Medical Society of Virginia. Since, of course, the signature of the Secretary is required to all such official letters of the Executive Committee, still he at no time approved of this action. However, many physicians throughout the State were misled into believing, and still believe, that he thought it best to withdraw the Repeal Bill, when in reality he desired to explain along with the same letter his real position and reasons therefor, but was not given the privilege and opportunity under the circumstances that then pertained. In the face of all diverting presentations of conditions, the postal-card vote showed over 80 per cent. of the physicians were not in favor of sacrificing the Repeal Bill for even such a much-desired and meritorious bill as a Board of Health measure. The reason for this is very apparent; not that doctors opposed the Board of Health, but they knew that, with everybody behind the move for a more efficient Board of Health, it would force itself forward and would be fostered, as it should be, whereas the Repeal Bill had only the impact of doctors to pass it.

Ordinarily, the will of the majority of a society, especially when so emphatically expressed, as in this instance, is respected and obeyed by every member of it, and not one seeks to thwart its mandates. But not so this time, for two members who were members of the Medical Society, aided the opposition of the Repeal Bill in the House after its passage in the Senate, and represented to the legislators

that the "Baker Bill" was all that was desired. It is needless to comment on the depressing effect this representation of conditions had on luke-warm friends of the Repeal Bill, as their subsequent action showed only too well when the vote was taken.

The *Bulletin* of the Board of Health quotes the Chairman of the Legislative Committee as saying immediately after the postal-card vote and return to Richmond, that the time lost taking the vote helped the Repeal Bill by arousing interest in it in every part of the State; but the *Bulletin* failed to state that in less than twenty-four hours after that conversation, it was apparent that this increase of out-in-the-State interest was being met and strenuously opposed by two physicians, prominent locally in and near Richmond, together with two regular lobbyists, and it is lamentable to admit that this continued till the final vote on the bill in the House of Delegates.

The *Bulletin* of the Board in the same issue gives further credence to the mistaken idea that *only one bill* could be passed. (Remember that each bill had passed one branch of the Legislature.) It says as follows: "The State Board of Health Bill [just previously called the "Baker Bill," but now claimed for the Board] was not passed to its final vote [in the Senate] until the Repeal Bill was defeated [in the House] and out of the way, it being tactitly understood that both bills would not be allowed to become laws." Will any one explain how anything can be in anybody's else's way when in another independent house? Ask any member of either House or Senate if their vote on any bill is contingent upon the vote of the other branch of the Legislature on an entirely different bill, and they will answer, "No." To admit this as true is to accuse the entire Legislature of doublefacedness and this honorable body of being a collection of log-rolling politicians run by a few "masters." This is a grievous mistake, for most assuredly it was the intention of the people of the State, as expressed by their legislators at all times, to have a better Board of Health and a larger appropriation to make it effective. There was never a day during the last session when any kind of bill covering the position desired was in danger of defeat, and the bill that was passed was never held up a day in the Senate

by the Repeal Bill in the House; but those who opposed the latter used it effectively in dividing doctors so as to defeat the Repeal Bill—a veritable political trick of designing politicians that deceived some conscientious men.

Another impression made by the *Bulletin* in the same article is the apparent absence of expressions of regret at results undesirable. Still another erroneous impression, made unintentionally, it is hoped, is that the Repeal Bill was in great doubt, and growing more doubtful of passage as the session of the Legislature progressed. Being better personally acquainted with those opposed to it, it is easily seen how the writer in the *Bulletin* might have been deceived, especially since one Delegate who opposed it vigorously lived near—in Richmond. However, a large majority of both House and Senate at all times were favorable to the bill—even the day it was defeated—and they really expected it to pass. The Chairman of the Finance Committee of the House, the brains of the opposition, offered (a confession of this fact) an amendment to the bill staying its effect for two years, but this was defeated. It is folly to think that he would have done this if he had not felt sure the bill would pass.

The journal of the House of Delegates will show that this statement is not an abstract theory, but an actual fact that occurred; consequently, it is wrong to embrace the idea, through misinformation, conveyed by the *Bulletin*, that the Repeal Bill was all along in great doubt of passage. If this was ever the case, and it came so near final—six more votes only being needed—it speaks wonders for the work done for the bill by the doctors of Virginia when the lobby of doctors and those opposed is taken into consideration; for the oldest members of the Legislature said of all the fights against any bill they ever witnessed in their legislative experience that the fight against the Repeal Bill was the bitterest. Methods were employed to drive members away, to compel them to pair or defeat their other bills, to strangle it in committee, to pass it by on the Calendar; but especially the speeches on the floor of the House, if presented before a bar of justice, would be admitted real crimes and admissible of punishment according to just laws. It is useless to add that with a three-months' session of the Legislature such

methods could not be used so effectively, and the bill would not have been defeated, even with a divided profession.

It is no wonder, then, that some politicians attempt to apologize for such conduct so discreditable to the fair name of Virginia legislators. The statement made by a few members of the House that the "persistence of the lobby after they were committed to the bill "was galling, and the statement of others that political annihilation was promised them in the future by physicians if they voted against it, and similar charges, are so utterly groundless that only desperation itself would have suggested them. It is astonishing that any physician would believe such untrue and absurd announcements from unfaithful representatives, since such reports originate from those who promised to support the Repeal Bill and then did not do so. Which story is to be believed, the first one that he would vote for the bill, or the last one after returning from the Legislature, why he did not vote for it—such reasons as above enumerated being offered for an atonement? The truth is, some legislators wish to *distort and discredit* the legislative work of the doctors throughout the entire State, especially that of the Chairman, because the latter was an eye-witness of their shortcomings, and unless they can get his statements discounted their political futures might be endangered by the wrath of their home physicians when the whole facts are made known.

In concluding this review of mistakes—and all good people of intelligence profit by them—one thing is clear to everybody: With two different organizations composed of physicians, working for the welfare of the State, neither secured the passage of the bills desired, but politicians defeated their Repeal Bill, and substituted and passed a Board of Health Bill of their own making. Stupid must be the one who cannot see that had all the doctors seen alike and *stood together, both the Repeal Bill and the Board of Health Bill would have been laws to-day.*

While the Board of Health Bill that was enacted is a good measure and the appointments made, in the main, are good, yet the method of making the appointments, clearly a political feature, if so desired, is not satisfactory to the medical profession, and a Board of Health law

without the cordial co-operation and support of the doctors of Virginia, is like the play of Hamlet with Hamlet left out. Sooner or later the law will be amended.

HOW MISTAKES ARE TO BE AVOIDED.

Physicians must get together and agree on a harmonious plan of legislative procedure. This can be done by compromises after a discussion of the questions at the meetings of the Medical Society of Virginia. The Legislative Committee elected next meeting must not be connected with the Board of Health to save such from unjust criticism, and each member should be independent of local conditions, and all should have visions sufficient to look over the State as a whole before arriving at conclusions. Sufficient financial support is imperative, so that the entire profession can be posted, and the views of legislators be known so completely that a cry of "one bill only can be passed" and such similar decoys will not again create alarm in the profession. This is all important, for as sure as the Legislature meets again those opposed to the Repeal Bill will start the same old yell that unless the doctors withdraw their Repeal Bill the appropriation to the Board of Health will be "cut out," or something of that kind. Unless the profession is forewarned and prepared for this "threat" a few sentimental doctors may be again misled, and the recent unfortunate history repeated. This condition must be met at the next Society meeting with a solution, for it matters not how insignificant a doctor may be, if lobbying against a bill known as a doctor's measure, his words will be echoed to the remotest parts of the Capitol by those opposed, as coming from *one of the leading physicians of the State.*

Next, but not, least in importance, friends of the profession must be not only elected to the Legislature, but thoroughly posted on the arguments for and against the Repeal and other bills, *as well as the methods of the opposition,* so that they will be prepared for every emergency and will not be disconcerted, it matters not how insidious or bitter the attack.

In conclusion, let it be understood that the right is conceded to others of honest opinions, though differing from the above, and no offence is intended in criticizing the methods of misinformed members of the profession who drew their information from local authorities.

To correct these and other erroneous ideas so hurtful to the future welfare of the profession, and to point the way to success in the future, is the whole purpose of this article. Certainly, in no sense is it intended to wound or create dissensions in our ranks, but the very reverse, so that physicians will never again be the victims of scheming politicians.

J. BEVERLY DESHAZO, M. D.

Ridgeway, Va., April 13, 1908.

Book Notices.

Surgery—Its Principles and Practice by Various Authors. Edited by WILLIAM WILLIAMS KEEN, M. D., LL. D., Emeritus Professor Principles of Surgery and Clinical Surgery, Jefferson Medical College, Philadelphia. Vol. III. With 562 text illustrations and 10 colored plates. Philadelphia and London. W. B. Saunders Co. 1908. Large 8vo. 1,132 pages. Cloth, \$7 net; half Morocco, \$8 net.

While this volume is a little late in issue, it loses none of its value to the surgeon. Two other volumes are yet to follow to complete the system. The most eminent of surgeons in Europe and America are the authors of the different chapters, each of which is quite complete in discussion of causes, description of conditions, diagnosis and surgical treatment—thus saving the need for the purchase of many monographic works. Volume III. treats of surgery of the head, the neck, thyroid gland, nose and its sinuses, larynx and trachea, thorax, breast, mouth, teeth and jaws, tongue, abdominal surgery, including the peritoneum and retroperitoneal space, surgery of the esophagus, stomach, liver, gall bladder and biliary ducts, pancreas and spleen. Of course, it is impracticable to give special mention in a book notice so limited by want of space to any special subject. But this can be said, that he who adopts this book as his guide or authority can nowhere find authority more eminent nor more up to date. The system of five volumes, when fully completed, will be invaluable to every surgeon. Good indexes are appended to each volume.

For removing ink stains use a solution of chlorinated soda. Wet the stain with the solution and wash thoroughly after a few moments.

Editorial.

To American Physicians Interested in the Alcoholic Problem.

During 1907 over 200 papers, lectures and pamphlets were published in Europe and America concerning alcoholism and inebriety, from a purely scientific point of view. Many of the authors complain that these papers were practically lost, because they did not reach medical men interested in the subject. The Scientific Federation Bureau, organized in Boston two years ago for the purpose of collecting and disseminating the facts concerning the alcoholic problem, proposes to secure a list of medical men interested in the scientific study of the alcoholic problem. This list will be valuable for authors and students who wish to address a special audience of physicians, not only to increase their interests, but to stimulate more exact studies of the subject. Such a list will enable the Bureau to extend its work of accumulating papers and reprints of all that is written, and keep authors and readers familiar with the new work that is done. All physicians who are interested in the scientific study of the alcoholic problem and research work along this line, and the studies of medical men at home and abroad, are urged to send their names and addresses so as to be registered and receive copies of papers and abstracts from authors and others who wish to have their papers read by interested persons. As chairman of the Board of Directors of the Scientific Federation Bureau, Dr. T. D. Crothers, Hartford, Conn., earnestly requests all physicians interested in this study to send him not only their own names, but the names of other medical men who would care to keep in touch with the new medical literature coming from the press, and also to know the latest conclusions of the scientific world concerning this problem.

The Wise County Medical Society

Met at Appalachia, Va., April 22, 1908. The following was the program of papers for the occasion: "Suggestive Therapeutics," by Dr. M. L. Steallard, of Appalachia; "The Young Physician Starting in Practice," by Dr. Holly, of Inman; "What Rules and Regulations Shall We Adopt to Prevent the Spread

of Tuberculosis?" by Dr. Hagy, of Appalachia; "Should a County Society Adopt a Schedule of Fees and Regulations—If so, What Should They Be?" Discussion to be opened by Dr. T. M. Cherry, of Norton.

The Charlotte Medical Journal and the Carolina Medical Journal

Have been consolidated, and will be published hereafter as the *Charlotte Medical Journal*. The editorial and business management will remain under the direction of Dr. E. C. Register, who has heretofore conducted the *Charlotte Medical Journal*. The new influences will undoubtedly greatly aid in the upbuilding of an already excellent journal, and we present our compliments and good wishes to its enterprising editor.

Dr. Tom A. Williams,

After spending two years in the study of nervous diseases in Paris and other European centers, has located in Washington, D. C., where he will give courses, to begin May 25th, on recent researches of the French School in the diagnosis and treatment of psychoneuroses. The course will consist of anatomicopathology and clinical work. The classes will be limited in number.

Dr. John W. Mallet,

Professor of Chemistry at the University of Virginia, has tendered his resignation, to take effect at the end of the present session in June. He has filled the position for over twenty-five years with distinction. He was honored by election as Emeritus Professor.

Dr. J. C. Walton,

Late of The Mecklenburg Sanitarium, has established offices at Murphy's Hotel, Richmond, Va., with a thoroughly up-to-date equipment, including complete electrical, hydrotherapeutic and sanitorium outfits.

Dr. George Ben Johnston, Richmond, Va.,

Has purchased a house at the corner of Franklin and Sixth Streets, of this city, which he proposes to equip as a private surgical hospital.

The Piedmont Medical Society

Held its regular April meeting at Orange, Va., on the 18th instant. Subject for discussion was "Puerperal Eclampsia," with Dr. M. L. Rea, of Charlottesville, as leader.

To Lessen the Sensitiveness of the Throat.

Before passing the stomach-tube, Hemmeter recommends the following anodyne spray:

R Cocain hydrochlorate, 3 per cent. sol. in benzoïnol..... 2 ounces.
Menthol, 1 per cent. in liquid vaselin ½ ounce.

Use in atomizer for spraying the throat.

Obituary Record.

Dr. A. L. Leftwich.

At a called meeting of the Church Hill Medical Society, held at the office of Dr. Ramon D. Garcin, Richmond, Va., Wednesday, April 15, 1908, the following preamble and resolutions were adopted:

Whereas, the Church Hill Medical Society has just heard with unfeigned sorrow of the death of their associate and friend, Dr. A. L. Leftwich; and,

Whereas, they desire to bear testimony to their esteem and regard for him as a man and physician: therefore, be it

Resolved, 1. That in the death of our friend this Society has sustained a severe loss. He was a charter member of this organization and was always active and energetic in promoting its welfare.

2. That we, as individuals, and as his associates in the profession, bear cheerful testimony to his ability as a physician, his sterling honesty and integrity as a man, and his cheerful, ready help as a friend.

3. That we will cherish his memory as a dear heritage and will endeavor to emulate his many virtues.

4. That a copy of these resolutions be published in the daily press, the local medical journals, and sent to the bereaved family.

(Signed) Ramon D. Garcin, M. D., Chairman; W. S. Beazley, M. D.; T. G. Pretlow, M. D.; J. F. Crane, M. D.; G. W. Gay, M. D.

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Original Communications.

THE IMPORTANCE OF CO-OPERATION OF THE MEDICAL PROFESSION IN MUNICI- PAL PUBLIC HEALTH WORK.*

By ERNEST C. LEVY, M. D., Richmond, Va.
Chief Health Officer of Richmond, Va., Etc.

The department of public health of a modern city is a most complicated piece of machinery, dealing with matters far more intricate than those which come within the province of any other municipal department. Its very foundation is the most wonderful known to man—his own body—with its liability to derangements of many kinds and arising from many causes; and it is with thousands, or even millions, of units of this unstable nature that health officials in a great city have to deal, thus involving an understanding not only of the unit itself, but also of sociological problems and of much in the field of engineering as well, since sanitation, as distinguished from personal hygiene, deals largely with man's environment, which is the special province of engineering.

It must, therefore, be clearly understood that a municipal health department cannot be administered as is, for example, the water department of a city, for the latter, dealing with inanimate matter, subject to natural and unchanging laws, has no difficulty in conducting an ideal department beyond getting the City Council to grant the necessary funds, ordinances and authority. These, it is true, are often difficult to secure, but, having obtained them, the rest is comparatively easy sailing. Thus armed, the department itself, with no further aid from the people, can supply the citizens with water pure and in abundance, for which they are called upon to pay a stipulated sum, in default of which payment the water supply is cut off.

But with a department of health all this is very different. The mere securing of funds is more difficult, since we cannot formulate our demands, as can the water and gas departments, in terms of so many feet of mains, so many meters, or such and such improvements of a tangible character; nor can we, at the end of the year, give an accurate summary of the number of miles of pipe laid, the number of cubic feet of water or gas supplied, or, most direct appeal of all, so many dollars added directly to the revenues of the city. True, we can show in Richmond that a conservative estimate of the cost of a single disease—tuberculosis—during 1907 was over a million and a half dollars—greater than the entire taxes paid into the city treasury during the same period. But this lacks the vital element of tangibility, which is so essential in appealing to men who have never devoted much thought along these lines. Hence, the appropriation of a few thousands in the effort to combat this scourge is secured with difficulty.

And in the securing of ordinances relating to public health, where these must be passed by a City Council, the same difficulty is encountered, for the average councilman is in far better position to comprehend the comparatively simple questions of water supply than the involved problems of public health.

But, granted that the health department has no trouble in securing the passage of all ordinances which they recommend and also the fullest financial support, this has solved but the simplest of the problems with which they have to deal. Before an audience of medical men it is unnecessary to enlarge upon the real difficulties. You are all aware how your ingenuity and skill are often taxed to the utmost in advising even one patient how to protect himself against the inroads of disease. Hence, you cannot but appreciate how intricate must be the ramifications in the work of a depart-

*Read before the Richmond Academy of Medicine and Surgery, January 28, 1908.

ment whose aim it is to control disease and prevent premature death in a city of many thousands of different races, diverse occupations, and varied social status and educational attainments.

To every conscientious man placed at the head of the health department of a great city there must come moments when he is appalled by the stupendousness of his task. At such times, but by no means then only, does he find his greatest encouragement in remembering the assistance which he can get from a sympathetic and well informed medical profession. The doctors of a city constitute a force in public health matters far greater than they themselves realize, but, like all great forces, this must be intelligently applied; for, undirected, it may go to waste, or, exerted unwisely, it may constitute a veritable danger instead of a blessing.

It is, therefore, the purpose of this paper to discuss some phases of the relation of the medical profession to municipal sanitation and to show certain of the most important ways in which the doctors can best co-operate with the health authorities.

As a starting point, it must be admitted that the chief work of the practising physician at the present time is the cure of disease, not its prevention. Hence, it follows that the average doctor can in no way so well aid the cause of public health as by assisting the constituted health authorities, to whom the prevention of disease is a subject of special study, and for which they have back of them a well-organized department. By working in harmony with the health authorities, therefore, the doctor can accomplish far more, and at an expenditure of less time and energy, than by any private efforts of his own. Naturally, the work of the practitioner of medicine along preventive lines, should not be limited merely to co-operation with the health department; still this constitutes the easiest way of getting results with a minimum of labor.

The simplest manner of rendering assistance to the cause of public health, and assistance out of all proportion to the amount of labor involved, is by the regular living up to certain ordinances of the city. Every well-regulated community has ordinances requiring the prompt reporting of deaths, births and cases of contagious and infectious diseases. It is a

matter of common experience that physicians, as a class, are habitually lax in living up to these simple requirements, and this cannot be but a matter of surprise and disappointment to the health officer when he is first brought to face the fact.

Realizing himself that all public health work is necessarily largely founded on, and guided by, a study of vital statistics, and that without prompt, full and accurate returns, such statistics are worse than useless, he must believe that remissness of the doctors in this fundamentally important matter cannot be due to aught but ignorance of what is involved.

The requirement which is in force in all registration areas, prohibiting any interment without a burial permit, issued on presentation of a properly filled-out death certificate, insures complete returns of all deaths. But, although every death must thus become a matter of record, still every health officer has great trouble in getting the doctors to give as accurate and complete information as is required for statistical purposes. The cause of death is habitually stated in a loose manner, thereby causing great trouble in properly classifying the death and materially lessening the value of statistics based on such returns.

Vital statistics cannot collectively be better than are the individual returns of which they are made up, and a very little care on the part of all the doctors would add wonderfully to the value of this important work. The labor demanded of any individual doctor in this connection is very little. In Richmond, each doctor signs, on an average, less than one death certificate a month, and to give this certificate even a quarter of an hour's time—and this much is seldom demanded—is surely not asking much when the collective value of the information thus obtained is taken into account.

When we come to the question of reporting births and contagious diseases, matters are in a far less satisfactory condition; for, while with death certificates the only difficulties are delay and indefinite returns, with births and contagious diseases the primary trouble is to get the returns at all in every case. Here there is no infallible check, as there is with deaths, upon the completeness of the returns and upon the delinquencies of the individual doctor, although a well-conducted health office has

many means of discovering when any doctor habitually neglects these matters.

It is astonishing how little the average doctor seems to appreciate the importance of certificates of birth. In a way, they are of even greater importance than certificates of death, certainly so far as the individual himself is concerned. In hundreds of contingencies in after life legal evidence of a person's birth may be demanded, and on this may hinge the most important issues of life and property; such as, for example, proof of descent, the establishment of the age of voters, of children desiring to enter school or obtain work in factories, in connection with the legal age of consent, in questions of insurance, inheritance and pensions, and in scores of other matters more familiar to the lawyer than to the doctor. Birth certificates must, of necessity, be filed at a time when the child is helpless to look after his own interests. The duty of the attendant to perform this act, so simple in itself yet so important, is, therefore, a sacred one.

But it is not only the rights of the individual child which demand the proper registration of all births. Taken collectively, the birth records form the basis of much important public health work which is impossible without a knowledge of the birth rate in the community. To mention but one, no calculations of the rate of infant mortality can be arrived at without reliable information as to the birth rate, and this is the surest index of the efficiency of public health measures in any community.

Regarding the prompt reporting of contagious diseases, this is a matter the importance of which can scarcely be over-estimated. Since it is with diseases of this class that health authorities are chiefly concerned, complete data as to the occurrence of all cases is one of the most fundamental necessities in efficient public health work. It is only by having the fullest possible knowledge of all cases of this kind which are present in the city, day by day, that the health department can perform some of its plainest and most valuable duties.

In all well-regulated health offices strict account is kept of the status of all contagious and infectious diseases in the community. Each day's returns are collated, studied and charted, in much the same manner as the daily weather map is made up. Cases reported

weeks, or even several days, after their origin lose in value by each day's delay. So, also, the prompt reporting of recoveries is an absolute essential in order that accurate knowledge may be at hand as to the number of cases of any disease of this class still on hand. In Richmond I am confident that we regularly carry, for example, more cases of typhoid fever than are really here, on account of the failure of the attending physicians to report recoveries.

If every physician would only understand fully the manner in which his reports of contagious and infectious diseases are made use of by the health department, he would see that his own case, or cases, may form a vital link in the chain of evidence which indicates the spread of these diseases in the community, and that for lack of just these cases the health department may be seriously hampered in its efforts. The cases of any one physician are seldom sufficient in number or sufficiently representative in distribution to throw much light on the cause of infection in a community. They have, therefore, but little value from an epidemiological point of view when taken by themselves; but when the cases of every doctor in the city are each day gathered together and studied in the health office, the results are invaluable to the department and to the community.

I have devoted considerable space to the discussion of the duty of physicians in reporting births and contagious diseases and in giving more attention to the filling out of certificates of death for the reason that these duties, so simple in themselves, are of such value to the community that every physician should deem it a privilege to be able, by acts demanding so little of his time, and no mental effort beyond simply remembering to do it, to contribute so greatly to the public welfare. When convinced that they should perform these duties for valid reasons and not merely because of ordinances imposing a fine for failure to do so, few physicians will continue to be derelict.

Personally, I so much prefer to have these services rendered voluntarily and cheerfully and with full appreciation of their importance, rather than through mere fear of a fine that I have not thus far, in the eighteen months that I have been in office, reported any physician for violation of these ordinances, and the re-

sults have amply justified this course. There are, however, a few doctors in this city whom it seems to be impossible to reach by persuasive methods, and I much fear that ere long it will be my most unpleasant duty to report some of my professional brothers to Police Court.

But the mere living up to the letter of the law regarding the matters above mentioned, is but a small part of the service which every doctor can render to the cause of public health through the health department. Time will not admit of much of a discussion of this broader field, but a few points will be briefly mentioned.

Every health officer knows, to his sorrow, that a large proportion of the public utterly misunderstands the real functions of a department of public health. To many, if not to most men, garbage collection, removal of dead cats and dogs, attention to back alleys and cutting weeds and grass on vacant lots constitute the aim and end of public health work; and when told that in Richmond none of these matters fall directly within the province of the health department, a puzzled look comes over their faces, asking as plainly as words, "Well, then, what is the health department for, anyway?"

Holding obsolete or absurd theories of the causes of diseases and knowing little or nothing of the true ones, this portion of the public fails to profit not only by the lessons which the health department endeavors to inculcate, but even, to a great extent, by the measures which it attempts to put in force. Obstinate adhering to their own notions, they consume hours of valuable time of the health officer in enlarging upon the noxious influence of uncut weeds or grass on their neighbors' lots, and often try to insist that the head of the department shall himself come forthwith to look at the condition in the rear of their homes, almost invariably concluding with the stock phrase, "It is a wonder everybody in the neighborhood hasn't got typhoid fever!"

I truly believe that in only a small proportion of these cases does the complainant credit the statement of the health officer—after he has agonized with them for perhaps half an hour, while neglecting really important work—that typhoid fever is not conveyed by long grass or even by dead cats and dogs! Rather do they leave with the firm conviction that the

health officer is simply ignorant of things which are matters of common knowledge, and the further conviction that he is derelict in his duty because he will not at once drop all else and hasten to the other end of town to look at these special weeds or see where that particular dead dog reposes, but will only agree to send an inspector!

Education is the only remedy for this, and here the doctor, going in and out of every home in the city as a trusted and respected advisor, can accomplish results which are beyond the reach of a public health department; for his relations with the people are more intimate and personal and his opinion is implicitly believed, not only because they know him better, but because they regard his views as likely to be less biased and more suited to their individual case.

Right here it is necessary to insist, however, that because of this very reliance which most persons place in the opinion of their family doctor, it is incumbent on him to become better acquainted with present-day conceptions of the origin and methods of spread of infectious diseases than some physicians are. I have, over and over again, found doctors not only backing up their patients in regarding "sewer gas," or a bad odor from almost any source, as the cause of typhoid fever, diphtheria and other diseases, but even themselves attributing such an origin to the cases they are called on to treat. Not only does this render it difficult, or even impossible, for the health officer to convince these people of the error of such theories, but it actually lowers the health officer in their opinion, because he does not accept the opinion of their own doctor.

Further than this, to inculcate such false teachings is productive of actual harm, since these persons are thereby held in ignorance of the true causes of these maladies, thus making them negligent of the proper measures to be taken for the protection of themselves and their neighbors. Physicians cannot too strongly realize the immense weight which their opinions on a multitude of subjects have with their patients; and this influence should be one of the most potent factors in education of the public in matters of sanitation, while at present it constitutes almost the sole means in most communities of impressing on them the lessons

of personal hygiene. But the very strength of this influence makes it potent for ill as well as for good, and instances of complications brought about by false teachings on the part of some doctors are numerous in every health office. As an example, I may cite a case which occurred in Richmond last year:

When our medical inspector entered upon the duties of his office, early in last June, among the cases which he was immediately called on to investigate, in the routine of work laid out for him, were two cases of typhoid fever in a single house. His investigation showed that one of these cases had taken to bed on May 3rd and the other on June 3rd. It was evident that the second of these cases was caused by secondary infection from the first, as it was learned that the attending physician had failed to give instructions as to the means of spread of the disease or adequate directions concerning disinfection of the stools and urine. Our medical adviser proceeded to give proper directions on these points and also strongly advised against the use, without previous boiling, of water from the cistern, which he had reason to regard as very probably contaminated.

On August 15th a third case of typhoid fever was reported in the same house, by the same physician, the patient having taken to bed on the 12th—another case of secondary infection, as the medical inspector found that none of his previous directions had been followed. With this reiterated example of the consequences of their neglect before them, the instructions previously given were even more forcibly laid down.

But on September 14th a fourth case was taken down in a member of a family occupying rooms on the second floor. They had another physician—one of the few of whom, as it appeared, we had not succeeded in getting into line, as he failed to report this case until October 10th. When our medical inspector paid his necessarily belated visit to this fourth case, he found that, even after all that had gone before, no precautions had been taken in the family down stairs. He asked the mother in this second family why this had not been done, stating at the same time that neglect of these precautions was almost certainly responsible for all the subsequent cases. Her reply was

that the people down stairs had told Dr. —, their attending physician, of the instructions given by the medical inspector, but that he had made light of them and that they thought their own doctor certainly knew more about the matter than any outsider.

In this case not only did the attending physician fail to discharge his plain duty by taking the initiative in giving instructions for proper disinfection of the excreta, but he even went so far as to cause these people, after they had been enlightened by the health department, to ignore advice which it was his place to have given in the first instance, with the consequence that this unfortunate family had typhoid fever among them for five months, not only suffering themselves from the ignorance and folly of their doctor, but also constituting a prolonged focus of infection to the neighborhood. I believe the day will come, and that in the not far distant future, when our courts will recognize the responsibility of the attending physician in such a case as this, certainly to the extent of awarding damages to the family, even if they do not go so far as to regard such conduct as criminal.

It is beyond the scope of this paper, dealing only with the ways in which the medical profession can aid in the work of the health department, to discuss the many ways in which, of his own initiative, the doctor can improve the health of the community by advice which it lies in his power to give, day by day, to the members of the families in which he practices. The collective value of such work as this on the health of the citizens is beyond calculation.

We commonly regard the term "preventive diseases" as applying only to certain of the infectious maladies. But proper measures of personal hygiene, in which the family doctor is in most communities even to-day the chief instructor, will do much to lessen the existence of very many diseases which are not communicable and which are not commonly classed as preventable. Besides this, the prevalence of some of our most fatal infectious diseases, such as pneumonia and influenza, cannot be combatted by any general measures of sanitation now understood. Yet, it unquestionably lies in the power of every one, by attention to simple matters of personal hygiene, greatly to lessen his chances of contracting these diseases.

In this field, therefore, the physician has immense scope to improve the public health and lessen the occurrence of premature death directly by his own efforts.

Throughout this paper I have assumed that every physician earnestly desires to advance the cause of public health in his community. Certainly nothing could speak more eloquently of the claims of the physician as a citizen and as a man devoted to his kind than does the simple fact that this assumption can be made without question. All of us would justly look with contempt on the doctor who would oppose measures of public health or who would even regard them with indifference, because their aim is to lessen the very conditions upon which he is dependent for his livelihood.

But commendable as is this attitude, and although it is maintained simply for the reason that it is in keeping with the nobility of the profession itself and the high character of most of the men who follow it, with no thought that this may in the end be to their own advantage, still, after all, it is doubtful whether the success of public health work in a community will actually lessen the practice of its physicians.

In the first place, we must admit that, immense as are the possibilities of sanitary science, still the greater part of all diseases which afflict mankind are not as yet preventable by any known means. A very considerable number of diseases can, however, undoubtedly be prevented by intelligent application of the lessons of sanitary science on the part of the health authorities, the medical profession and the people themselves, and this number must increase with the development of that science and a fuller appreciation of its possibilities.

And, as the public comes more and more to realize that for this constantly increasing list of diseases, prevention is far easier and more satisfactory in every respect than is the attempt to cure them after once established, they will also come to adopt more and more the policy of calling upon their physician to instruct them how to keep well, and, further, of calling him in at earlier stages of illness—stages more amenable to treatment. Again, they will learn to have their physical condition carefully looked into at regular intervals, just as they have learned to have their teeth examined by

the dentist, thus detecting, as is so often done even now in connection with examination for life insurance, the insidious beginnings of disease in the apparently healthy.

All these things will open up a vast field for the medical profession, a field in which their opportunities for good will be immense, their proportion of cures greater, and from a selfish standpoint, their fees better assured, in the absence of a long and expensive illness to deplete the family exchequer.

But, in order to meet this new state of affairs, the physician must be thoroughly qualified for it. He must become more proficient in diagnosis, since the recognition of disease in its incipency calls for a higher degree of diagnostic skill than does the advanced case. He must also become a better hygienist, for if the people are to pay their money for advice in preventive measures, they will not be satisfied with hygienic generalities, such as can be gotten from a school text-book or even from the daily press.

In this phase of the subject, as in every other, we find that the health authorities and the doctors can work hand in hand. That we need the active co-operation of the medical profession, I have sufficiently emphasized; and in this preventive practice the physician will need the assistance of the health department if he would get the best results. To give only a few illustrations, the doctor must be dependent on the health authorities to see that when he prescribes a milk diet the patient can get milk which will furnish the desired nutriment without subjecting him to the risk of typhoid fever or other intestinal diseases; when he prescribes life in the open air he looks to the health authorities to see that the air is not befouled with smoke or laden with expectorated germs or malaria-bearing mosquitoes. In other words, the health authorities must safeguard the environment in general, while the doctor prescribes the relation of his patient to the environment.

In the foregoing paper I have endeavored to show a little of the possibilities of co-operation between the medical profession and the health authorities. Above all else, there must be mutual understanding. Without this, no health department can succeed. Without this, the many petty daily annoyances from endless sources would be unbearable and the occasional

greater misunderstandings of the ignorant and the assaults of the vicious would leave a more lasting sting. Personally, I feel more deeply grateful to the doctors of Richmond for their splendid support of our own health department than I can hope to express. Small matters still remain to be adjusted; but these, I am confident will receive at your hands the same kindly and intelligent consideration that have marked your every act in this direction during the past year and a half.

THE MODERN SURGICAL TREATMENT OF EXOPHTHALMIC GOITRE—ANALYSIS OF OVER FIVE HUNDRED CASES TREATED OPERATIVELY—CONCLUSIONS.

(Concluded from p. 34, issue of April 24, '08.)

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The anatomical changes noted in the primary and secondary forms of this disease are unlike, so unlike that they of themselves make imperative the classification of the disease into primary and secondary forms. In the secondary cases we agree with Dean Lewis⁵ when he says that the goitre, in the secondary forms, does not differ in structure from the simple or parenchymatous, or other goitre, upon which the Basedow's symptom-complex were grafted. Exophthalmic goitre has been observed in simple goitre, in fetal adenomata, in cysts, and in carcinoma of the thyroid gland.—(Bloodgood, Ehrhardt). It has been thought that small tumors of the thyroid gland, the seat of secondary Graves' disease, act as irritants, causing an over-activity of the gland, much as a foreign body in the eye will produce an excessive secretion of tears, and the removal of this source of irritation by operation has been followed by a complete relief of the symptoms.

In the primary form of Graves' disease, definite pathological changes are constantly present in the thyroid gland. Kocher and Reinbach, Brissaud and Langhans, have denied the above statement, but the existence of these changes has been confirmed by so many competent observers that their occurrence can no longer be contested. (Greenfield,¹⁰ Askanazy, Soupault,¹⁸ Haemig, Aubarsch, MacCallum²² and Ehrhardt). In twenty-eight primary cases

of exophthalmic goitre MacCallum found changes present in the thyroid gland in each instance, although all the glands and all parts of the same gland were not equally involved in all of the cases. It is well to bear in mind that changes may occur in one portion of a gland and be absent in another. Dean Lewis examined carefully the thyroid gland in four cases of primary exophthalmic goitre, and his findings agree practically with those of Greenfield, Edmunds, MacCallum, etc. What are these changes which are considered as constant and almost as characteristic?

1. Changes in the follicles which are increased in number and which are also changed in size and form. Instead of appearing round or square, when examined microscopically, they appear branched and stellate. Dr. Rodocanachy²³ noted an increase in the number of the alveoli, proliferation of the epithelium and changes in its character. There was presented the appearance of a gland which is working at high pressure. We find an increase in the secretory tissue, for the number of the alveoli is increased and the epithelial cells themselves, instead of being cuboidal, are columnar. Dean Lewis⁵ says: "It seems as if the proliferating epithelium, following the lines of least resistance, had grown into the follicles. The connective tissue of the follicle is also invaginated so that in many sections the invaginated epithelium, with its connective tissue stalk, resembles an intestinal villus." In other parts of the gland the follicles are unusually small. Many of the follicles contain desquamated epithelial cells. The secreting area of the vesicles is increased by ingrowths from their walls.

2. Changes in the character of the epithelial cells. The cells are changed from the cuboidal to the cylindrical, columnar type. The epithelial proliferation may be so great that alteration of the shape of the cells results from mechanical pressure.—(Edmunds). Many of the cells are in a state of fatty degeneration.—(Virchow).

3. Qualitative and quantitative changes in the colloid. The colloid is greatly diminished in amount; it may be absent. This change, however, also has been noticed in the thyroid gland of patients dying from other diseases. Some of the vesicles, instead of containing

colloid, are filled with cell. Is this disappearance of colloid due to lessened secretion, or does it result from more active removal by the lymphatics? That is still an unsettled question.

4. Increase in vascularity. The blood vessels are distended and are increased in size; the friability of their walls has been noted and commented upon by many operators.—(Kummel, Kocher, Mayo). This friability increases the liability to primary and to secondary hemorrhages. In this, as in all other active hyperplasias, the enlargement of the nutrient arteries is very evident. No adequate idea of the vascularity of the gland is gained from inspection of the specimen after death, but at operation it is found to be extraordinary rich in widely distended vessels. This is especially noticeable in the veins.

5. Changes in the connective tissue. There is an increase in the amount of connective tissue. In some cases, this increase in connective tissue causes a lobulated appearance in the tumor. The fibrous septa of the gland may show some thickening at a comparatively early date. All the above mentioned histo-anatomical changes may exist in small foci and not throughout the entire gland. Probably this explains why, in some instances, they have escaped the observation of investigators.

THE CONTRAST EXISTING BETWEEN EXOPHTHALMIC GOITRE AND MYXOEDEMA.

The thyroid gland is an organ essential to the integrity of the human organism. In the absence of accessory thyroid gland or glands, the spontaneous or gradual arrest of function

of this body, or its total destruction by disease, or its ablation by the surgeon, will almost, if not invariably, be followed by myxœdema, either acute or chronic in type. Kocher reports 70 per cent. of cachexia strumipriva in thirty-four cases of total excision of thyroid glands. Post-operative tetany and myxœdema are identical, as far as their etiology is concerned (?) one condition often develops into the other. (Von Eiselsberg¹). Tetany, it would seem, is a condition of parathyroid insufficiency. The Mayos (Rochester, Minn.) avoid removing all the glandulæ parathyroidæ save the posterior capsule of the thyroid gland. They also lessen thereby liability to injury of the recurrent laryngeal nerve.

The development of impending myxœdema can be prevented; its manifestations controlled either by the successful transplantation of thyroid tissue in another part of the body, or by continual injections of thyroid (Vassale) or by prolonged feeding of thyroid gland.—(Lanz, Canter²⁴).

The above facts are accepted as proofs that myxœdema is a disease due to insufficiency, or to absence, of normally functioning thyroid tissue in the system, as ample grounds, for consideration of myxœdema among the diseases of the thyroid gland.

The demonstration of the fact that in exophthalmic goitre we have a disease which is the diametrical opposite of myxœdema in symptomatology, pathology and therapeutical indications, will aid to give credence to the thyroid theory. Let us consider the evidence that contrasts the two diseases, as to the

ESSENTIAL SYMPTOMS.

Exophthalmic Goitre.

1. Enlargement of the thyroid gland (almost always present).
2. Exophthalmos (a cardinal symptom).
3. Frequent presence of other ocular symptoms, as Von Graefe's, Dalrymple's, Stellwag's, Jellinek's and Rosin's, Gifford's, (25) etc. Eye symptoms are of great diagnostic value, chiefly by way of confirmation. Gifford's sign is an involuntary resistance to eversion of upper lid.
4. Excitable and mobile pulse, palpitation, tachycardia. Permanent tachycardia is more commonly met in exophthalmic goitre than in any other affection.
5. Exophthalmic goitre tremor (cardinal symptom). Murray noticed tremor in 111 cases out of 120.
6. Agitation, insomnia, irritability, excitability. A peculiar mental condition of nervousness is a common symptom in exophthalmic goitre.
7. More or less profuse perspiration. Skin fine, soft, moist and warm. Feel better in cold weather. Diarrhœa frequent.
8. Typical myxœdema may superven on the subsidence of an equally typical exophthalmic goitre.

Myxœdema.

1. Atrophy or absence of the thyroid gland (is mentioned in all the reported cases).
2. Recession of the eyeball not uncommon. In cases not consecutive to exophthalmic goitre, exophthalmos is never present.
3. Absence of ocular symptoms.
4. Sluggish heart action. Bradycardia a common symptom.
5. Myxœdema absent, except in its rare occurrence in tetany.
6. Apathy, somnolence, dullness of apprehension and of perception.
7. Absence of perspiration even in the warmest weather. Myxœdematous skin. Patients always feel cold. Constipation common.
8. Myxœdema never precedes exophthalmic goitre.

AS TO PATHOLOGY.

Exophthalmic Goitre.

Glandular hyperplasia, increase in number of follicles.

Myxœdema.

Follicles are markedly diminished in number; may be absent. In cases where gland is not absent there is noticed a progressive glandular atrophy (26).

AS TO THERAPEUTICAL INDICATIONS.

Exophthalmic Goitre.

1. The ingestion of thyroid preparation is almost always harmful. It aggravates the symptoms.
2. All measures which tend to lessen or diminish the amount of thyroid secretion are followed by improvement.

Myxœdema.

1. The continual ingestion of thyroid preparations is positively curative.
2. Implantation of gland tissue, if the latter maintains its integrity, is curative.

The symptom-complex of this affection can, to a certain degree be determined by the ingestion of large doses of thyroid gland substance, or of its various preparations. Our knowledge of the physiological action of thyroid gland substance, or of its preparations, is still limited. Tachycardia and increased metabolism constantly result from their ingestion. Toxic doses will cause such symptoms as rise of temperature, insomnia, agitation, polyuria, albuminuria, complete paraplegia, etc. These symptoms we meet also frequently in cases of exophthalmic goitre. The fact that the symptom-complex of this affection can be experimentally determined, produced by the ingestion of thyroid preparations, is no longer contested. In our opinion, it forms another important link in the chain of evidence supporting the thyroid theory.

Cunningham administered daily, by mouth, to a rabbit one gramme of thyroid extract; it caused exophthalmos. Lawford has reported one case of exophthalmos due to thyroid feeding. Edmunds²⁷ found that feeding dogs and monkeys large amounts of thyroid substance, could bring on exophthalmos tachycardia, loss of weight and wasting. Murray²⁸ obtained similar results. Nothhaft²⁹ reports a case of a patient who took 1000 5-grain tablets of thyroid extract in five weeks. He developed all the symptoms of exophthalmic goitre; upon cessation of the drug all the symptoms promptly disappeared, with the exception of the struma and exophthalmos, which persisted for six months, and then gradually disappeared. Doyen performed a partial thyroidectomy in a case of exophthalmic goitre; cure resulted. For some reason or other, the patient took some tablets of thyroid extract; the symptoms of exophthalmic goitre recurred. With suppression of the drug the symptoms subsided. Beclere³⁰ ob-

served the development of the symptom-complex of this affection in a myxœdematous woman, who had taken at the beginning of the treatment 92 grammes of thyroid extract in eleven days. The drug was discontinued; the symptoms disappeared.

A critical analysis of the voluminous literature of the subject has convinced me that the following conclusions are justified:

1. Thyroid gland substance, or any of its preparations, should never be administered in the treatment of exophthalmic goitre. Their use in that disease is irrational, and it is almost invariably attended by an aggravation of symptoms. Their use invariably increases the dangers of operative interference.

2. As a therapeutic agent in the treatment of exophthalmic goitre, thymus gland substance and its various preparations are useless. Their use is, at times, attended by an aggravation of symptoms. They cannot be considered curative agents.

3. Parathyroid extract as a curative agent of exophthalmic goitre has no efficiency. MacCallum says that the alterations noticed in the glandulæ parathyroidæ do not seem to be constant or sufficiently extensive to support the idea that the parathyroids have anything to do with the development of the disease known as exophthalmic goitre.

4. The medicinal treatment of the disease which we are considering is, the use of belladonna being excepted, in reality largely symptomatic. For the anemia, arsenic has been given; for the nervousness and restlessness, the bromides; for the tachycardia, digitalis, strophanthus, etc. All these agents are palliative—not one has ever proven to be curative.

5. All symptoms of medical treatment of this affection, be they hygienic, dietetic, medicinal, organotherapeutic or electrical in nature, are

unsatisfactory, are disappointing. Their comparative powerlessness has induced surgical endeavors to cure the disease. There is not any form of medicinal treatment which has been successful with sufficient frequency to carry conviction of its worth.

6. Serum therapy* of exophthalmic goitre is as yet in an experimental state. The results attending the use of "thyroidectin" are not invariably satisfactory. Miller, Quine, Billings and others have had failures attending its employment. Their use is not devoid of dangers.

7. It is now demonstrated a fact that all operative measures which tend to lessen the secretory activity of the thyroid gland, or to diminish the amount of thyroid gland tissue present in the organism, are of value in the treatment of exophthalmic goitre. That method must be chosen which at the time seems to be the least dangerous without sacrificing chances of success.

(a) Intra-glandular injections are unsafe in exophthalmic goitre. There is the danger of sepsis, of injecting the irritant agent into the blood vessels, of provoking alarming hemorrhage (alarming through the compression that it may exert upon the respiratory passages).

(b) The ligation of the thyroidal arteries in this disease was first recommended in 1886 by Woffler. It has been practiced by operators of such eminence as Roux, Rydigier, Kocher, etc. It is now used only as a preliminary, or as an accessory, step to partial thyroidectomy. The ligation of the four thyroid arteries is liable to determine gangrene of the thyroid gland; is liable to induce thyroid insufficiency.

The objections to ligation of two or three of the thyroid arteries as a routine treatment of exophthalmic goitre are the following:

1. It is a procedure often difficult of execution, the hyperthrophied thyroid gland having altered the anatomical relations of the part; the infiltration of the tissues also adds to the technical difficulties. The ligation of the vessels is especially difficult in the retroclavicular and retro-sternal varieties of goitre.

2. Owing to the greatly increased vascu-

larity of the organ, branches of the thyroid arteries are liable to be mistaken for the trunks of the vessels.

3. It does not secure as complete nor as permanent mitigation of the symptoms as partial thyroidectomy, and it is, we believe, equally difficult to perform. Ligation of the inferior thyroids is just about as serious a matter as thyroidectomy. Dressman states that improvement is slower after ligation of the vessels than after operative treatment on the gland.

(c) Exothyropexy for exophthalmic goitre has been performed with varying results. This operation has been termed "an unfinished partial thyroidectomy."

(d) In the absence of accessory or aberrant thyroid bodies, total thyroidectomy is very liable to be followed by cachexia strumipriva. This explains why the operation is no longer performed by those that know. Kocher reports 70 per cent. of cachexia strumipriva in thirty-four cases of total excision of the thyroid gland. Post-operative myxœdema can always be controlled by the administration of thyroid extract.

(e) Partial thyroidectomy is as yet the most satisfactory operation for performance in all cases of exophthalmic goitre, be they primary or secondary in type. Kocher, as a result of his enormous experience, believes that we can say that partial thyroidectomy can be performed without danger, provided the heart is sound, careful hæmostasis is obtained and the wound drained. In cases that survive the operation, it is invariably attended by marked alleviation of symptoms, in many instances by complete and permanent cure. Kocher is of the opinion that partial resection and ligation of the vessels is the most rational procedure. He first ligates the two superior thyroid arteries. This, in his opinion, is easy of execution, and makes the subsequent work easier. He then ligates one inferior thyroid artery before extirpating the gland. No more thyroid tissue need be left in situ than is present in the normal organism—that is, from 30 to 60 grammes. The surgeons that have, for the cure of this disease, removed the largest quantity of thyroid tissue short of its entirety, are those that have obtained the very best results, both from the standpoint of the number of recoveries, as well as from the standpoint of completeness of recoveries. If not enough gland tissue is re-

*By serum therapy is meant the employment of either (a) the serum of thyroidectomized animals; or (b) the serum of animals treated with increasing doses of thyroid extract; or (c) milk in the dried or liquid form of thyroidectomized goats. With the use of these different sera, authors report failures and successes.

moved, the maximal benefits are not derived from the operation. If too much is removed, thyroid insufficiency may develop. A small amount of glandular tissue is all that is required to maintain the ordinary nutrition of the body. When the thyroid gland is not totally removed, the possibility of post-operative myxœdema can be said not to exist. Kocher met it only once in 1,000 operations for goitre. In this case he removed half the gland, the remaining half atrophied. The symptoms disappeared following the administration of thyroid extract.

8. The secondary forms of exophthalmic goitre, when subjected to partial thyroidectomy, almost invariably recover from the operation and from the disease.

9. Operators disagree as to the most suitable anesthetic for these cases. All the anesthetic agents have their partisans. Fatalities have occurred with all of them. Local anesthetics have the disadvantage of not completely abolishing the perception of pain. General anesthetics have the disadvantage of increasing the cardiac insufficiency and of frequently being followed by cough, which may induce secondary hemorrhage, by vomiting that may soil and infect the dressings on the wound. Kocher recommends local anesthesia; he never operates on singers for goitre under general anesthesia. The Mayos (Rochester, Minn.,) employ general ether anesthesia in almost all their cases. Kummell uses oxygen-chloroform. Kurt, Schulze and Riedel have seen acute bronchitis follow operations for exophthalmic goitre in which only local anesthesia had been employed. Ries (Chicago) employs scopolamine-morphine anesthesia. According to Professor Fenger, the degeneration of the heart muscle will account for some of the sudden deaths, while the absorption of thyroid, shock, anemia and general nerve exhaustion will account for most of the other deaths that are not due to the anesthetic.

10. The dangers of partial thyroidectomy in exophthalmic goitre are either avoidable, such as infection and hemorrhage, or unavoidable, such as "acute thyroidism." This latter, also called "thyroid fever," is liable to occur after the observance of all precautions now known to us. We do not yet know how to prevent, nor how to cure, "acute thyroidism." It is not

always fatal. Free drainage of the operative wound is our most serviceable weapon for combating the complication. The nature of the anesthetic, and that of the operation, seem to have little influence in its production. All Basedow patients seem very sensitive to surgical operations.

11. There is no doubt that the mortality is greater in bad cases than when the symptoms are slighter and the patient in better condition. Early operations give the best results. They give a lower percentage of deaths and a very much higher percentage of cures. Exophthalmic goitre tends to diminish vital resistance and to exhaust the nerve centers; hence operate before the patient's vitality has been lowered by chronic thyroid intoxication. Kocher lays stress on the avoidance of the development in all cases of goitre of what he calls the "thyroid heart." This, he asserts, can be acquired either by waiting too long for surgical intervention or by an excessive iodine or thyroid extract therapy. He assures us that the prognosis in Basedow's disease will be much better in the future, if the operation is done early.

12. *Operative points:*

(a) It is well to prepare patients for some time, to observe them and to better estimate their ability to withstand operation. *

(b) Place the patient in the inverted (reversed Trendelenburg) position; put a round pillow beneath neck so as to give better access to goitre; maintain neck in that position which interferes least with respiration. The most rigid aseptic precautions should be observed to avoid infections, mediastinitis, deep phlegmon of neck, thrombo-phlebitis, septicæmia, etc.

(c) Kocher's transverse convex incision allows of a complete exposure of both lobes. From a cosmetic standpoint it is the best, as the usual neckwear will hide the scar. If it is necessary to make a section of the sterno-hyoid and sterno-thyroid, the Mayos advise that this be high, so as to preserve the nerve supply to these structures. After removal of the tumor, divided muscular structures may be sutured. After completion of the operation, cutaneous wound must be sutured accurately. Drain through an opening made below this wound.

(d) Hemostasis must be perfect. Do not

depend on temporary compression to arrest the bleeding. It is deceptive. When possible tie the bleeding vessels—it is preferable to leaving clamps in position. Clamps interfere with the healing of the wound. Nurses should be instructed to watch for first symptoms of secondary hemorrhage.

(e) Tissue should be left at the poles of the gland, preferably about the inferior thyroid arteries, so as to reduce the risk of injuring the recurrent nerves.

(f) Drainage is of the utmost importance—

(1) *To remove what primary wound secretion is present.*—Although at the time of operation the bleeding may be stopped absolutely, there is always considerable oozing afterwards into the large cavity of the neck which it is impossible to obliterate by sponge pressure. This clot may cause interference with union, may cause pressure upon the trachea.

(2) *To remove what contents of the gland have been expressed into the wound during the operation.*—A certain amount of the toxic secretion of the gland being allowed to accumulate slowly in a wound that is closed will often cause such symptoms as may prove fatal in an otherwise successful case.

(g) Swab mucus away from throat. There is always a hypersecretion of mucus giving rise to troublesome coughing. This is one of the reasons why the bleeding points should be well secured for avoidance of secondary hemorrhage.

(h) Keep patient physically, mentally and emotionally quiet.

13. Recovery from all symptoms is neither immediate nor simultaneous. The first symptom to subside is the tachycardia. The tremor and the nervous and psychical symptoms also disappear quickly. The total disappearance of menstrual disturbances is of good prognostic omen. It takes months for the entire beneficence of the operation to become manifest. The exophthalmia is the last symptom to disappear. Albert Kocher says that a total disappearance of exophthalmos can only be expected in those cases in which the operation is performed early. Eye symptoms disappear, in the majority of cases, quickly and completely, irrespective of persistence or disappearance of exophthalmos. The longer the period of observation after the operation the better appear the results.

14. When, after a partial thyroidectomy, the symptoms recur, the recurrence is most frequently associated with an hypertrophy of the remaining portion of the gland. Removal of a portion of this will bring about a cure.

15. *Partial thyroidectomy is indicated—*

(1) In all cases of secondary exophthalmic goitre.

(2) In all cases of primary exophthalmic goitre:—

(a) When, after three months of well conducted appropriate medical treatment, the patient's condition is not markedly improved.

(b) When the goitre compresses or distorts the trachea, or the esophagus, or both. Long-continued dyspnea is very liable to beget pulmonary emphysema.

(c) When tachycardia is marked. Long-continued and excessive tachycardia is very liable to beget organic heart changes.

(d) When exophthalmos is so marked as to prevent complete closure of the lids during sleep. Kocher and others report cases where patients lost their eyesight through ulceration of the cornea secondary to marked exophthalmos.

(e) If the patient is losing strength.

(f) In all acute cases that seem like a sudden intoxication of the body by thyroid, even when no marked enlargement of the thyroid body can be demonstrated.

16. Surgical treatment of exophthalmic goitre is justified by theory and by facts.

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SURGICAL ASPECTS OF TUBERCULOSIS.

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To review the literature of the past year on tuberculosis would require many days of close application. Most of what has been written has been along the line of the pathology of the disease, its prevention, modes of infection, and the treatment of the pulmonary form. This is but natural since if we know the mode of infection and its pathology we can better combat the cause and thus prevent the spread of the disease to some extent. Further, the cases of pulmonary tuberculosis out-number those of other parts of the body very much, and possibly are more easily recognized. This being the case, our subject has been comparatively neglected.

The wide-spread inertia that formerly existed both among the profession and the laity in regard to tuberculosis has been overcome almost entirely, and now there are large bodies of medical men who are devoting their lives to this subject. The laity have come forward nobly, and are not only aiding financially in advancing the crusade against this disease, but are posting themselves on the modes of transmission of the disease and the best way to eradicate it. The tubercle bacillus is a worthy foe and probably the most tenacious germ with which we have to deal. It will take all the skill and combined knowledge of every race of people on the globe to eradicate it.

As all of us know, tuberculosis is an infectious disease due to the presence in the tissues of the tubercle bacillus. In pathology it is classed among the group of diseases known as infectious granulomata, the remaining members of the group being syphilis, actinomycosis, leprosy and glanders.

In considering the surgical aspect of tuberculosis, let us take it in the following order:

1. Its pathology and diagnosis.
2. The treatment and prognosis.

One of the most characteristic features of tuberculosis is its chronicity: "When we speak, therefore, of tuberculosis of the lung or of any of the important organs, we mean that the bacilli tuberculosis have invaded the tissues, and that a chronic destructive lesion has been established."—Bryant. Mixed infection occurs less frequently in joint tuberculosis than in the lung. This is because the air, which is laden with infectious germs, is taken

into the lungs, whereas there has to be some unusual occurrence for outside germs to get into the joint. As illustrating the prevalence of tuberculous diseases among children, we find in Bryant's *Surgery* the following: "In the Hospital for Ruptured and Crippled Children for the last ten years, out of 100,294 cases there were 52,462 children referred to the Orthopedic surgeon. Of these cases, 8,176, or 15.6 per cent., were tuberculous"

The order of involvement is:

1. The lungs.
2. Lymphatic nodes.
3. Epiphyses of long bones (including joints and bones generally.)

It is more frequent in the bones and joints of childhood than is pulmonary tuberculosis at this age, and at the same time it is conceded that the lesion of the epiphyses is secondary to that in the lungs. Broncho-pneumonia, whooping cough, and measles in childhood are frequently followed by tuberculous epiphysitis and synovitis. Those cases in which the child has one or more attacks of broncho-pneumonia and later develops fever and a limp are frequently seen. After the joint has been opened either spontaneously or by the surgeon's knife, a mixed infection may occur. This is the same condition of affairs that exists in the lungs, and will be followed by the same amyloid degeneration of the organs if it keeps up for a great length of time. The lymph nodes exhibit a great preference for the tubercle bacillus. In Dowd's statistics, given in the *Annals of Surgery*, 1905, embracing twenty years at the Children's Hospital in Berne, in 21 per cent. of the cases that were first affected by pulmonary tuberculosis the disease first developed in the cervical lymph nodes. The intestines, kidneys, epididymis and pia mater included 29.2 per cent. of the cases. The throat was the most common portal of infection. The mesenteric nodes and the peritoneum came next.

As to its pathology, we may make the broad statement that the tubercle bacillus usually gains access to the general circulation of the blood or lymph through some break in the skin or mucous membrane. It has been stated and perhaps proven by some that it is possible for the germ to work its way into the tissues through the mucosa without any break in the

latter. At any rate after it gets into the tissues it usually imbeds itself and, as it were, builds a fort by causing to be thrown up a granulomatous swelling of the tissue. This is the focus from which the germ may be carried to various other parts of the body by the blood or lymph current. Probably the most frequent primary site for the tubercle bacillus is in the tonsil. This is the primary focus from which many a child becomes infected. The tonsils in a young child are frequently the seat of acute tonsillitis, which leaves them in a weakened state and fit soil for the invasion of the tubercle bacillus. Wright says: "The mucous membrane absorbs, the lymphoid tissue harbors, and the lymph channels carry the tubercle bacillus." From the tonsils, the lymph glands of the neck become infected and swell up, producing what for years has been called scrofula. In other instances the tubercle bacillus finds more favorable soil in the spongy bones of the body, such as those of the spine, heads of the long bones, especially the femur and tibia and the small bones of the tarsus and carpus. If left untreated, pus is formed and dissects its way along the fibrous structures, producing a "cold abscess."

The serous and mucous membranes of the body are also receptive for the tubercle bacillus. The most extensive serous membrane of the body, the peritoneum, is often the seat of tuberculosis, and its pathology is so varied that we shall only touch upon it.

The clinical classification of this form of the disease, according to Bull, is as follows:

1. That which is associated with an abundant serous exudate.
2. That which is accompanied by adhesions and large nodular tumors in the omentum and mesentery.
3. An ulcerated purulent form in which the intestinal coils and omentum are crowded together in an indistinguishable mass in which are pockets having gaseous and purulent contents.

The other serous membranes that are so frequently involved are the meninges and the synovial membranes. The former would probably come under the medical aspect of the disease. The conditions as found in the peritoneum and joints are truly surgical.

W. J. Mayo's statistics show that in a period of ten years, out of 5,687 intra-peritoneal

abdominal operations, 3 per cent. were for some form of tuberculosis. Localized intestinal tuberculosis was found twenty-one times and tuberculosis of the appendix twenty-nine times in 1,888 operations for appendicitis.

Mayo says: "Tuberculosis of the intestines occurs in three forms:

"1. Multiple ulcers due to inoculation from sputum swallowing by tuberculous patients.

"2. Simple, or at least, a few ulcers in the ileum, with a marked tendency to heal, with stricture formation. Such cases come to the operating table with obstruction.

"3. Conglomerate tuberculosis, usually of the cecum at its junction with the ileum, giving rise to tumor, and having the microscopic appearance of carcinoma."

He also says that tuberculosis of the vulva, vagina and cervix is very rare, and is largely confined to young girls before puberty and to old women after the menopause. As to the kidney, liver and spleen, all that can be said is that the kidney is more frequently involved than either the liver or spleen.

In Harbitz's investigation in a series of autopsies on children under fifteen years of age, he found tuberculosis in 42.5 per cent. In 117 autopsies, the digestive tract including the tonsils, cervical and abdominal lymph nodes were affected in 20.9 per cent.

Tuberculosis rarely occurs primarily in the peritoneum, but sometimes it does. It reaches the latter through: (1) The blood or lymph current. (2) By extension from some organ that is covered with peritoneum. The exudate may be fibrinous, sero-purulent, or hemorrhagic, or a combination of these. There are adhesions usually, and these may be very dense and vascular or may be only cobweb-like and easily broken up. Usually the serous exudate is sterile and its injection into a guinea pig gives rise to no symptoms at all. The tubercle is found on the serous surface of the bowel and is nearly always present. It may be minute or as large as a dime. In nearly 17 per cent. of his autopsies, Bonome found the alimentary tract to be the primary seat of tuberculosis. Unusually the intestines or mesenteric annexes were involved. He found primary intestinal tuberculosis most frequent in children up to sixteen years of age, in whom it reaches the proportion of 23 per cent. of all cases. Between

sixteen and fifty-five, it reaches 16 per cent. In the aged, it is rare—6 per cent. The picture, then, of a case of tuberculous peritonitis is a young person; more frequently a woman who becomes progressively more cachectic; the temperature may be elevated and in a short time there will be noticed an enlargement of the abdomen, progressive in nature. The functions of the intestines may be interfered with even to complete obstruction. The accumulation of fluid in the abdomen may increase until the distension becomes marked and the circulation is more or less interfered with. It may be confined by adhesions, or be free in the cavity.

Tuberculosis of the different abdominal organs may lead to the formation of a tumor in their locality. The course of the disease is usually chronic, and the diagnosis would be made from:

1. Chronicity of the disease.
2. The progressive cachexia.
3. Age of the patient.
4. Accumulation of free fluid in the abdominal cavity or of encapsulated fluid.
5. Presence of nodules sometime in various parts of the abdomen. These are usually in the omentum or mesenteric glands.

As confirmatory evidence, we frequently find tuberculosis of the lungs or perhaps other parts of the body.

Tuberculous synovitis is usually secondary in tuberculosis of the heads of the bones forming the joint. The characteristic symptoms of this form of arthritis are:

1. Slowness of the development of the symptoms. In the morning the patient will complain of pain in the joint and frequently by night will be over it.
2. Early symptoms are very slight.
3. Patient gives a family history of tuberculosis.
4. After a time there will be some swelling and a doughy feeling of the joint.
5. There is a tendency of the condition to affect the epiphyses first and the synovia secondarily. If this condition is neglected, white swelling occurs, consisting in a shiny, swollen joint, with atrophy of the muscles above and below it. Fortunately, this condition is rarely seen now.

The hip joint is favorable to the development of tuberculosis on account of:

1. The exceptional exposure of the joint to strains and trauma.
2. The intra-capsular situation of the upper epiphyses.
3. Relation of the joint to some of the most powerful muscles of the body. They make the fibrous structures around the joint very unyielding.

The average duration of tubercular bone disease was found by Bryant, in a series of 860 cases, to be three and a half years. Cold abscess in bone gives rise to localized pain, boring in character, and tenderness on pressure, but no enlargement of the bone. Diagnosis of this form of the disease must exclude sarcoma, rheumatism and syphilis, also deformities from contusions and un-united fractures. The failure to make a diagnosis is due, in these cases, frequently to a slovenly habit of not examining thoroughly each patient. Any child with joint trouble should be examined carefully. Its history just previous to this condition of affairs should be inquired into and the child kept under observation. The latter is the most difficult part of our duty to perform, as it is so hard to control the actions of a patient and parents, especially those of the ignorant class, who are apt to think that we are having the child return simply to have something to do. However, it is unfortunate for the patient if, at the first examination by a physician, it is perfectly evident that the joint in question is the seat of tuberculosis. The sooner the diagnosis is made, the better the chances for complete recovery.

The kidney is frequently the seat of tuberculosis, and we consider this a surgical form. The characteristics of the affection are that it is usually in one kidney, and that the infection comes from the blood current or the lymph or extends from the bladder upward. This latter statement has been made by pathologists for a number of years, but there are some who disagree from it. Charles P. Noble, of Philadelphia, in January, 1907, reported ten cases of nephrectomy for primary tuberculosis of the kidney. Of these, nine were women and one a man. He has found no evidences of ascending genito-urinary tuberculosis in his experience, and although it may occur it seems proba-

ble that it is not as frequent as formerly taught. On the other hand, Noble thinks that the bladder is infected by means of the pus which passes through the ureter.

In making a diagnosis of tuberculosis of the kidney, the local condition and the state of the urine determine us. The patient is usually anemic, has had vague ilio-lumbar pains on one or both sides for several months or perhaps years, and the general condition is much below par. Locally, there may or may not be a swelling in the region of the kidney. An examination of the urine will always show pus cells and sometimes blood. The presence of tubercle bacilli in the urine would, of course, be positive, but you rarely find them there. The urine from the two kidneys should be kept separate either by catheterizing the ureters or by using the Harris segregator. This will determine which kidney is involved.

In June, 1907, Keyes, of New York, reported 100 cases of tuberculosis of the testicles. In 71 per cent. of these cases, tuberculosis occurred between the ages of fifteen and thirty-four, while in 65 per cent. the testicle was first attacked between these ages. In forty-nine cases there was no evidence of previous tuberculosis when the testicle first enlarged. It broke down in seventy-six of the cases. Frequently the other testicle is the seat of the disease and will exhibit it after the first has been removed.

The intestinal mucous membrane is very susceptible to tuberculosis. The most frequent seat for it is in the ileo-cecal region, and Hemmeter, in the *Journal of the American Medical Association* of recent date, has a splendid article on this form of the disease. He says the disease is latent in its incipency. It is not recognized as serious until the symptoms of stenosis appear. "Above all, persistent constipation, nausea, vomiting, and frequently visible intestinal peristalsis occur." If hemorrhage occurs from the bowel, it may be confused with carcinoma of the same situation. If it is accompanied by pulmonary tuberculosis, it is easy enough to recognize it. The stenosis in carcinoma is said to develop more quickly than that in tuberculosis. Cecal tuberculosis occurs earlier in life, lasts longer; stenosis develops more slowly, and is accompanied by fever, and tubercle bacilli are found in the stools.

The treatment of this destructive disease is

of utmost importance and second only to its diagnosis. As in other conditions that admit of, and frequently demand, surgical measures for recovery, it may be treated and sometimes successfully without any surgical intervention whatever. There are so many stages to this disease that one line of treatment does not suffice. No matter how slight the infection or what part of the body affected, we must treat any form of tuberculosis as a constitutional disease.

This means that our line of treatment shall be: (1) Hygienic. (2) Dietetic. (3) Local.

It is hard to determine just how far surgical treatment can modify the various forms of surgical tuberculosis. If we can remove the focus of the disease, no matter where it is, we have accomplished much, as the danger lies in the fact that the tubercle bacilli may push their way into neighboring tissues or organs or be carried to distant parts through the blood or lymph and do great damage. If the danger of removal of a focus is greater than its presence, it would be wiser to leave it. This sometimes is the case; e. g., pulmonary tuberculosis and in the epiphyses sometimes. The danger of mixed infection must always be considered and no surgical procedure undertaken without the strictest aseptic precautions. The hygienic dietetic treatments have been so thoroughly brought before you in the past year that I shall not detain you to-night with any further discussion of them.

Beginning with the respiratory passages, it is well to remove the tonsils and adenoid tissues in any case that has been the subject of frequent attacks of tonsillitis or has chronically enlarged tonsils. Especially is this necessary where the cervical lymph glands are enlarged.

In many destructive diseases, if we can obtain rest of the part involved, recovery will be much more rapid. This holds good in tuberculosis and is one of the essentials of treatment here. If the lung could be brought to rest for awhile, its treatment would be much more satisfactory. In the case of the joints, it is necessary to provide the part with a splint of some kind that will permit of the patient's taking out-door exercise and at the same time keeping the part at rest. Another thing is extension so as to separate opposing joint surfaces. This is accomplished by various forms

of apparatus, with which all of you are familiar. Pressure is often employed, since it secures rest to the part.

Operative treatment consists in the removal of the focus, the evacuation of the tuberculous abscess in an absolutely aseptic way in order to prevent mixed infection, and the correction of deformity. It is always necessary, where the vital resistance of the patient is much depressed, to improve the general condition by hygienic treatment. If the focus is entirely removed before the neighboring tissues or organs have been invaded or before infection has been carried through the blood or lymph currents to remote organs, we have accomplished a great deal. In the lung, foci frequently remain a great length of time without causing any danger to life. The same is true of the epiphyses. Now, if we can remove either of these foci without infecting them, or endangering the patient, we should do so.

In the case of the "cold abscess," we have a puzzling condition to deal with. As a rule, it is best to aspirate this from time to time and close the wound with collodion. If a free incision is made in these cases, it is indeed hard to prevent a mixed infection from occurring at subsequent dressings. The tendency to use iodoform emulsion in the treatment of cold abscess has been almost entirely abandoned.

Excision or resection of the joint is done much less frequently than formerly. This is due to the fact that with the improved methods of diagnosis, the physician is able to discover the trouble much sooner than formerly. The tendency now is to remove only the diseased portion with the curette, scissors and chisel, and leave as much of the joint surfaces as possible in the hope of getting some motion later.

Since Spencer Wells, forty years ago, unintentionally operated upon a case of tuberculous peritonitis, many patients have been operated upon with good results usually in the serous and dry form, but not so favorably in the ulcerative form. During the last ten years much investigation has been made of those cases operated upon and those not. Some assert that about one-third of all cases will recover spontaneously, and that operation upon patients with fever may do harm. The operation consists in evacuating the fluid, drying out the abdominal cavity, and removing the prim-

ary cause which may be a tuberculous appendix, uterine appendages, or a cecal tumor. The immediate results in all forms are good, but sometimes are not lasting. All statistics vary according to different types of the disease.

Kidneys, the seat of tuberculosis, should be drained if the abscess is single, and removed if the organ is honey-combed and non-functioning. The results are very gratifying if only one kidney is involved.

Keyes says epididymectomy is the operation of choice if there is hyper-acute and generalized epididymo-orchitis, or unless suppuration has occurred in the testicle. The prognosis is fair for life, but the other testicle has to be removed at a subsequent operation. Bryant says: "The prognosis in any given case depends largely upon the degree of thoroughness with which the treatment is carried out." Incomplete surgical measures not only do no good, but are harmful by causing a spread to neighboring organs and mixed infection in other cases.

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"POST-OPERATIVE ABDOMINAL FISTULA."

By MARTIN D. DELANEY, M. D., Alexandria, Va.

A "post-operative abdominal fistula consists of a communication between the lumen of the intestine and the abdominal wall, whereby the contents of the bowel are expelled.

Etiology. Injury to the bowel as a result of breaking up adhesions and not repairing the injury; too much pressure from gauze drainage when too tightly packed; pressure of glass drainage tubes; continued suppuration from a cavity walled off by intestine; disease of the bowel; necrosis of the bowel, e. g., when the circulation is cut off as in appendicitis; pressure from silk ligatures; inability of a Murphy button or other mechanical device used in intestinal surgery to pass and causing pressure, are among the causes of post-operative abdominal fistula.

Symptoms. The symptoms differ in different individuals. As a rule, in from twenty-four to thirty-six hours after an abdominal operation a fecal odor can be detected in the wound, and, on removing the dressings, considerable fecal matter will be found. In some

cases the temperature will range between 97 and 101 degrees F.; in others it will ascend as high as 103 to 105 degrees. The pulse rate will usually average 110 beats per minute in some cases, and in others it will remain between 120 and 180. It may be so rapid that it cannot be counted. I had a case of that kind. The patient, a woman, had a Murphy button removed by Dr. Rittenour, and yet she recovered from the fistula.

In the beginning, nausea and vomiting are the rule, yet, in other cases, the stomach is perfectly quiet. There is, as a rule, considerable tympany and constipation leading one to believe that he is dealing with a case of general peritonitis. In some cases, the bowels move and there is very little tympany. The average patient complains of severe pain in the abdomen; others do not complain at all as a result of the absorption of toxic products; they are stupid. The majority of patients have an anxious look, similar to that seen in general peritonitis, but they do not sweat so freely. The skin, as a rule, has a sallow appearance. Patients complain of excessive thirst in most cases, and just as soon as liquid is swallowed it is vomited; other patients retain all nourishment that is administered. Some patients lie in a stupor and there is great difficulty in arousing them. They do not complain or want for anything, and it is with the greatest difficulty that food can be forced into the stomach; in fact, a mouth-gag has to be placed between the teeth, but just as soon as they get a taste of the nourishment they seem to relish it. If this class of patients can be sufficiently aroused and if asked where they have pain, they usually answer that they have none.

Diagnosis. The diagnosis is easy. The fecal odor and, when the dressings are removed, finding fecal matter on the dressings, will clinch the diagnosis.

Prognosis depends on the cause, the vitality of the patient, the situation of the fistula, and the time of its appearance. If it appears several days after operation, and if sufficiently strong adhesions have formed to prevent the introduction of septic material into the free abdominal cavity, the prognosis is favorable; if, also, the patient is able to retain nourishment, the prognosis is favorable. If the fistula appears immediately after operation, the prognosis is not so good; or, if the patient is

unable to retain nourishment, he is likely to die from exhaustion or inanition.

Treatment. In the beginning, after the recognition of the fistula, the best treatment consists in keeping the patient perfectly quiet during the first four or five days, in order to enable the adhesions to become dense, changing the dressings four or five times a day, washing the edges of the wound with alcohol and applying carbolated zinc ointment. After five days, irrigate the bowel with normal saline solution until the solution comes through clear; then wash out the wound with saline solution followed by peroxide of hydrogen.

Nourish the patients as often as possible in order to keep up their strength. With this treatment I have seen the majority of abdominal fistulae heal. In those cases where the wounds do not close spontaneously you will always find something foreign in the abdominal cavity, such as an infected ligature, a piece of gauze drain, or a sponge, and just as soon as the foreign material is removed, the fistula will close. If it does not, an operation should be performed and the edges turned in.

911 Prince Street.

A FEW POINTS NOTED IN THE TREATMENT OF EPILEPSY.

By T. J. HUGHES, M. D., Saltville, Va.

The points to which I shall allude are not presented in the form of new discoveries in the treatment of epilepsy, but rather as a line of thought, seeking information from the experience of those who may have something to offer.

Admitting the unfortunate fact that the etiology and pathology of the various forms of epilepsy have not been definitely determined, we can but acknowledge that until the primal etiological factor of the disease shall have been established no definite line of treatment can be outlined.

Epilepsy, according to some authorities, who term it a symptom rather than a disease, may be divided into two general classes, viz.: *organic*, applying to those cases which are traceable to some local lesion or infection; and *functional*, to those attributable to no known special or localized cause.

It is the latter, or functional class, to which my remarks will more particularly refer—the treatment of the former, or *organic* forms, being indicated by the presumed locality of the

lesion or the organ involved. The discussion of the empirical treatment of the various forms of epilepsy, which necessarily varies with each individual case, and which would be tiresome, does not come within the scope of this paper. My object is to emphasize one or two points which in my limited experience have given me some hope in the management of these cases.

First. The discontinuance, as far as is practicable, of the bromides and all forms of opiates. These, I believe, only temporarily subdue the nervous system and at the same time lock up the secretions and add to the mental depression.

Secondly. From a careful study of the cases which have come under my observation, and in the absence of an established and verified hypothesis as to the etiology and pathology of the disease, becoming disheartened with the results from the empirical line of treatment, and acting upon the assumption and, in some cases, the conviction, that there is a toxic process going on with inadequate elimination, I have been employing only such agencies, indicated by each individual case, to effect and maintain thorough elimination. The results from this line of treatment have been more gratifying than from any other in my experience. Such a plan of treatment has been followed by a decided improvement in most cases and, in some instance, by a complete cessation of the convulsive seizures has resulted.

The patient's general health is, of course, treated as indications suggest. A bland though nourishing diet is prescribed. As the secretions of the kidneys in most cases is diminished with a corresponding increase of the solid constituents of the urine, freely drinking of water is urged, as is also regular moderate exercise. Tonic baths, massage, electricity, etc., are of value in these cases.

Admitting that "to clean out, clear up and keep clean" is a basic principle in the well regulated treatment of any disease, and that in emphasizing the efficiency of elimination in the treatment of epilepsy, I do so, not with the idea of introducing something new in the category of its treatment, but rather to offer a protest against the indiscriminate drugging of these patients with bromides, opiates, etc., to subdue symptoms at the expense, in my opinion, of the mental faculties.

I am fully cognizant of the fact that from

a few isolated cases upon which to base my convictions I would be erratic rather than practical to arrive at conclusions while we are yet floating upon the sea of uncertainty as to the cause of the disease. Yet, may I not reasonably contend that auto-intoxication may play an important part in the exaggeration, if not in the cause of these nerve explosions?

Such being the impression under which I have resorted to the eliminant line of treatment, I do so with due consciousness of the inadequacy of my knowledge of the direct cause of the toxic process, or seat of the malady which I approach with those anxious and awful presentments which the greatness of the charge and the weakness of my powers so justly inspire. And in discrediting the universal administration of drugs, which, in my opinion, only anesthetize the nervous manifestations, while the devastating and undermining influences of the disease progress, I do so with the consistent opinion that they also add mist to the cloud that has baffled the scientific research of our great and noble profession.

KUHN'S SUCTION MASK FOR TREATMENT OF PULMONARY TUBERCULOSIS.*

By GEORGE J. WILLIAMS, M. D., Newport News, Va.

I recently had an opportunity to observe some cases of pulmonary tuberculosis treated with the "Kuhn Suction Mask," and being much impressed with the marked improvement of the patients, I wrote Professor E. Kuhn, of the Royal Charity Hospital, Berlin, asking for details of treatment and results of his later experiments in the use of his mask. He very kindly forwarded me the results in the form of recent reprints, at the same time calling my attention to the marked increase in the blood elements obtained by its use.

The mask is a celluloid arrangement constructed so as to admit of free expiration, while inspiration is interfered with to a limited degree—the object of which is to induce hæmic plethora in the lungs. Former attempts at the treatment of pulmonary tuberculosis by this method proved a failure because of faulty technique, as all other instruments interfered with free expiration, thereby counter-balancing the results obtained by slightly limiting amount of air taken in in a given time. It is a recog-

*Read before the First Virginia District Medical Society, in session at Newport News, Va., March, 1908.

nized fact that a greater disposition of the upper portion of the lung to tuberculosis is due to the lesser amount of movement of the upper portion of the thorax. The apices of the lung are not of themselves points of minor resistance, but impaired circulation of the blood and lymph, due to the above mentioned condition, rendered them more susceptible to this disease.

As you are aware, the treatment of certain diseases by inducing hæmic plethora was suggested to Bier by the observations of Rokitsanski in cases of heart disease. Rokitsanski found post mortem that heart disease, accompanied by pulmonary congestion, showed either evidences of extinct pulmonary tuberculosis, or the lung was entirely free of this disease; on the other hand, in pulmonary stenosis, the patient almost invariably died of phthisis pulmonalis.

In kyphosis, where the tubercular process is located in the spinal column, the subject rarely dies of pulmonary tuberculosis, owing to the lung congestion caused by the circulatory embarrassment, but almost invariably succumbs to heart disease.

The intrinsic value of blood is demonstrated in the frequent location of primary tubercular disease, on the posterior aspect of the epiglottis and vocal cords—parts very poorly supplied with blood. In cirrhosis of the liver, which is often a cause of tubercular peritonitis by favoring lymph stagnation, the primary large nodules are found upon the parietal layer of peritoneum, while on the parietal coat of the bowel which is richly supplied with blood, tubercular nodules are seldom found.

The advantages of the treatment may be briefly summarized: *First*, and the most striking, is the immediate change in the type of respiration; owing to the increased negative pressure in the thorax, the diaphragm is drawn by suction upwards, participating feebly in respiration; a costal type of breathing is the result and the widening of the upper chest follows. Associated with the consequent hyperemia is an accelerated flow of lymph, differing in this respect from other passive congestions which are associated with injurious amounts of lymph stagnation.

Second.—Absence of danger of hemorrhage; the mask being employed as a prophylactic.

Third.—Strengthening of the heart.

Fourth.—Stimulation of blood forming organs by diminished oxygen tension, analogous to that which takes place in high altitudes without the disadvantage of marked respiration effort. As to the influence on cellular elements of the blood, Professor Kuhn's experiments show that by a moderate interference with the inspiration for an hour a marked increase in the cell elements and hæmoglobin in the peripheral circulation occurs, and after the use of the mask of from a few days to a few weeks, using it an hour each morning and evening, this increase is absolute and permanent.

The increase is accounted for on the same theory applied to the increase of cells by going into high altitudes. That is, in high altitudes there is more blood in the external capillaries, veins and lungs, and the body wants to restore this blood that is taken from the great circulation through new formations.

No increase of cell elements was noted where oxygen was given during the use of the mask. When given independently, a decrease was noted.

I submit some charts that may prove of interest, that demonstrate the increase of cells (red) and hæmoglobin.

Correspondence.

Reply to Dr. Lankford's Article on the Hyoscine-Morphine-Cactin Compound.

Mr. Editors—My attention has been called to an article in your issue of March 27th, in which Dr. Burnley Lankford criticises the H-M-C compound. Inasmuch as statements made in this article do not do justice either to myself or to this compound, I shall be under many obligations if you will grant me space to correct them.

The perusal of Dr. Lankford's paper makes it evident that he has not read my reply to the criticism of H-M-C contained in the Journal of the A. M. A. of December 21st. This reply was published in the Journal of the Association for January 14th, and while the editor of the Journal took some liberties with it, among others things cutting out about six hundred words, I think, in the main, it presents the facts in such a way that had Dr. Lankford read it carefully he would not have made the

unfair criticism of myself and my work which he has.

Now, regarding the points at issue: First, concerning the identity of hyoscyne and scopolamine. We have never contended that pure hyoscyne and pure scopolamine are *chemically* different. That there may be a difference in their pharmacological action is at least fairly an open question. We sincerely believe that there is, as well as in other instances of chemical (formula) identity. We know, for instance, that salicylic acid derived from oil of wintergreen and synthetic salicylic acid are chemically and, apparently, pharmacologically identical, but very many physicians prefer the natural salicylic acid. We assuredly have the right to a similar preference for hyoscyamus-derived hyoscyne, especially when this preference is supported by the results of clinical experience.

In this connection I want to ask Dr. Lankford to read an article in the *Journal of the American Medical Association* for April 25th, by Dr. Wendell Reber, of Philadelphia, upon "*The Comparative Potency of Hyoscyne and Scopolamine Hydrobromide in Refraction Work.*" In this article Dr. Reber clearly demonstrates, through a series of practical experiments made upon the eyes of several persons with normal eyes, that hyoscyne is 50 per cent. more potent than scopolamine, in the same individual, both as regards the pupillary response and the onset of full cycloplegia. He used one-tenth per cent. of each salt, the hyoscyne in one eye and scopolamine in the other. His conclusions are as follows:

"The relative pharmacodynamic power of hyoscyne hydrobromide and scopolamine hydrobromide as used in ordinary office work may be said to be somewhere close to 59:92. Or, to reduce it to the commoner form of statement, hyoscyne in these test cases showed itself approximately 50 per cent. more potent than scopolamine in producing cycloplegia for refraction work. So much for the academic phase of the matter which seems to be rather at variance with the claims that chemistry makes for these two drugs."

Both the hyoscyne and scopolamine were obtained from Merck & Company; both had a rotatory power of -20 degrees, and were therefore identical both chemically and as regards purity.

The findings of Dr. Reber support our contentions at every point. It is a significant fact that this important paper, which was read at the Atlantic City Meeting of the American Medical Association, was held for eleven months in the office of the *Journal* of the Association, while its editor was trying hard to "do us up" on these very points.

The really important point to be remembered is this—that all the early experiments, as well as much of the later experiences with scopolamine-morphine used as an anesthetic were made with a scopolamine which we now believe to have been impure and unsafe. This explains the high mortality attending its use. Recognizing this fact, we have always used in our H-M-C tablets only true hyoscyne derived from hyoscyamus; and this alkaloid, so far as we have used it, has been of a superior quality and exceptionally free from the dangerous contaminating alkaloid, apoa tropine, and the optically inactive atropine. We have used the hyoscyamus-derived alkaloid exclusively in the H-M-C combination. It is also a fact that the overwhelming majority of the so-called "hyoscyne" on the market is a scopolamine-derived alkaloid and should in all fairness always be called scopolamine; to call it otherwise is misleading. The reason for this scarcity of true hyoscyne is that the amount of hyoscyne in hyoscyamus is very small and obtained at much greater expense than scopolamine from scopol. Furthermore, it is true, so far as we have been able to secure data, that with hyoscyne from hyoscyamus much better results have been obtained than from the scopolamine alkaloid in this or any similar combination.

Dr. Lankford makes the statement that "Dr. Abbott has acknowledged that he buys all his hyoscyne from Merck." I do not know the source of his information, for the statement is certainly not true—far from it. I have bought a great deal of hyoscyne from Merck & Company, but I ceased purchasing from them entirely some months ago, when they would not longer give me the positive assurance that they could and would supply me with the hyoscyamus-derived alkaloid. I now buy all my hyoscyne abroad and undoubtedly have in my vaults at this time more of the true alkaloid than can be found elsewhere in all America.

One other statement regarding Merck &

Company is misleading, viz., that in which he inquires, "How can his (Abbott's) hyoscine be so different from and so much purer and safer than all the rest" since Merck & Company sell most of the hyoscine used in this country? Merck & Company, till quite recently, listed and sold two kinds of "hyoscine"—one from *hyoscyamus* and the other from *scopola*. The first was listed at a higher price. Of the *hyoscyamus*-derived alkaloid there was very little on the market, and I took from Merck & Company for some two years practically all that they could supply. Other manufacturers, practically all of them, were satisfied with the *scopola*-derived alkaloid or *scopolamine*. Within the last few weeks Merck & Company have again offered me *hyoscyamus*-derived hyoscine, but as the quantity which they had to dispose of was very meager, far too small to satisfy my needs, I have continued to buy in Europe from other reliable sources.

Now, it may be that absolutely pure *scopolamine* and absolutely pure hyoscine are identical in action; we shall not undertake to discuss that question. But this I know—we have secured results from hyoscine which satisfy me and my patrons as to the superiority of the alkaloid which I am using. I believe that the results justify me in this preference and that I am entirely within my rights in maintaining it. Concerning the application of *scopolamine*, young Wood of Philadelphia, presented a tabular statement from which he deduced a death rate following its administration, of one in two hundred and twenty-one cases. We have now placed in the hands of American physicians between three and four millions of H-M-C tablets. Up to the present time, we have been able to secure but five reports of fatalities even attributed to them. Of these, three are distinctly contradicted by the physicians in charge, who state that the deaths were not due to this anesthetic. One of the others is reported at second-hand, and our experience with such reports is such that we refuse to receive and credit them until we have gotten at the facts at first-hand. These we are so far denied.

According to Wood's statistics, there should have been at least several hundreds of deaths from the administration of even a fraction of this enormous number of the anesthetic tablets. The discrepancy is too glaring to be accounted

for on any other ground than that the statistics applying to *scopolamine* and *morphine*, as collected by Wood, do not apply to the H-M-C tablets. No other explanation has yet been vouchsafed. What other could be?

We attribute it largely to the difference between the quality of the *scopolamine* used in Wood's gruesome list and the hyoscine from *hyoscyamus* which we employ. The opponents of the method ignore this distinction, and base their arguments on the chemical identity of chemically pure *scopolamine* and hyoscine. Had we, under cover of the "authorities," quoted as to the identity of these two articles, placed upon the market under the name of "hyoscine" a preparation which, instead of containing this alkaloid, contained the *scopolamine* to which so many fatalities have been attributed, we might have been accused of attempting to mislead the profession but not now. That we are charged with "fraud" for presenting and advocating a purer article and one true to name instead of a cheaper and often impure one seems strange indeed. On which side lies the fraud? On ours, or on that of the chemical houses which are doing exactly this latter thing?

Now, with regard to *cactin*: I do not know any one who has maintained that this substance is poisonous, nor does it necessarily follow that a remedy, to be effective, must be a poison. The statement made by Hatcher and Matthews concerning its non-toxic character are, therefore, by no means convincing, especially since their experience is contradicted by thousands of physicians who have used this remedy with success in a great number of clinical cases. Our own clinical observations, and those of others in whose qualifications as clinical observers and honesty as men we have confidence, agree that when administered in certain pathologic conditions this remedy promptly and conclusively evidences that it is not inert, but, the rather, is a valuable weapon for the use of the clinician. In cases where we have prepared these anesthetic tablets with and without the *cactin*, and submitted them to clinicians without notifying them of the difference (as to which were which), in every instance the reports favored those which contained the *cactin*.

Not a scintilla of truth or even of suggestion has been offered to show that hyoscine from

hyoscyamus is in any way injurious like impure scopolamine, or inferior to scopolamine at its best.

Not a scintilla of truth or even of suggestion has been offered to show that cactin is harmful; and it surely is not inert.

If, therefore, the Abbott Alkaloidal Company has given its customers the purer article, hyoscine, instead of the more cheaply produced and often impure scopolamine, and has added cactin, even though it be claimed by our purposeful critics to be inert, yet demonstrated and acknowledged by them to contain no injurious properties, where lies the fraud?

Our opponents have persistently endeavored to show that cactin is a secret proprietary article. This is absolutely untrue! We have as persistently denied this; have told the exact truth concerning the origin and preparation of cactin; have asserted that we exert no proprietary rights over it, and that every drug house is free to obtain and supply it if they choose. Since it is neither secret, monopolized, nor misrepresented, where lies the unethical conduct or fraud on our part?

I wish to say further concerning Matthews, upon whose testimony Dr. Lankford relies so implicitly, that this man was employed by me about the first of November last to study cactin along certain special lines. I wished to know all he could tell me about its action in pathological states, and paid him in advance for this service. A few days after I had made this arrangement with him he telephoned me that cactin was a remarkable remedy, having a distinct vasomotor action such as would naturally be expected from it. Thereafter I received but two brief notes from him—each in answer to letters of mine inquiring concerning the progress of his investigations, neither giving any details concerning his experiments. Awaiting, in the meantime, a detailed report of his work, I was dumfounded to see in the Journal article of December 21st the statement that Professor Matthews had prepared a paper concerning this remedy and given it to the Journal, and this without giving me the slightest information concerning the character of experiments he had made, concerning the results of such experiments, the methods employed, the dosage used, etc., and, further, the gist of his article is to the effect that he agrees with Hatcher with whose findings, to a considerable extent, we do not disagree, and so told Matthews, but whose

deductions we absolutely deny. It was on the assurance of Matthews that he had ample facilities to, and could and would, test this and several other preparations from cactus with which I supplied him (but which he evidently did not touch) in pathological states, and in co-operation with ourselves, that we put the matter in his hands. An amusing sequel is that, after I had submitted my reply to the Journal of the Association, in which article I stated the essential facts given here, I received a very brief letter from him returning the money I had paid him exactly two months before to a day. This little story teaches—well, what does it teach?

These persistent attacks upon us display such unfairness and such venomous animosity that we believe they merit explanation. The only charge that can be brought against us is that we refuse to give up entirely our own judgment in therapeutic matters. As free American citizens and physicians, we claim and will uphold our rights to individual judgment, and will not submit to dictation without reason.

In closing, I wish to reiterate the fact already known to many readers of the *Virginia Medical Semi-Monthly*, and which has been testified to by a number of its contributors, as its editor has said, that in the hands of a fair-minded, sensible, able doctor, H-M-C (Abbott) is a reliable and satisfactory combination. It is not free from danger, of course, but is as free as any combination of such powerful drugs well can be, but it is controllable and *it gives results*. Furthermore, Mr. Editor, as you say in your kindly comment upon Dr. Lankford's rather strenuous article, "Satisfactory results in practice are the things sought by the doctor."

Theory is good; factful knowledge coming from it is good, but have not we all, as physicians, the right to our own individual opinion as to the merits of remedies? May we not be taught by our own experience?

W. C. ABBOTT, M. D.

Chicago, Ill., April 15, 1908.

Editorial.

The South Piedmont Medical Society

Will hold its next regular meeting at Lynchburg, Va., July 21st.

The Medical Society of Virginia.

The Chairman of the Executive Committee, Dr. Paulus A. Irving, Richmond, has arranged for the holding of the Thirty-Ninth Annual Session of the Medical Society of Virginia in the Auditorium of Jefferson Hotel, Richmond, Va., beginning Tuesday, October 20, 1908. The Session will probably last through Friday, October 23d. The Pharmaceutical Exhibitors, etc., should arrange with the proprietor of the Hotel for spaces. Under the efficient presidency of Dr. William F. Drewry, of Petersburg, it is expected that the Session will have by far the largest attendance of members of any ever held. Applications for Fellowship from all parts of the State are also being received in such numbers at this early date as to indicate that the addition to membership will be the largest of any one year since the organization of the Society. Scientifically, the prospects are also good that the number and quality of papers to be presented will equal the best. This will be the first session of the control of the Society being under the management of the Constitution and By-Laws adopted at the Chase City Session last November. If there prove to be frictional points in the working of the new order of things, they can be studied out and amended. As matters develop, with reference to the forthcoming session, they will be noted in this Journal. It has been pretty well decided that there will be no banquet, as in former years.

Dr. George Tully Vaughan.

Former Assistant Surgeon-General P. H. and Marine Hospital Service, and for many years Professor of the Principles and Practice of Surgery in Medical Department of Georgetown University, is President-elect of the Association of Military Surgeons of the United States. A fine portrait engraving of him is published in *The Military Surgeon* for November, 1907, accompanied with a short biographical record. Dr. Vaughan has always manifested deep personal interest in the Medical Society of Virginia, of which he has for a number of years been an Honorary Member. He has very generally attended its Sessions, and has several times contributed able papers to its *Transactions*. Honors have flowed in upon him from many quarters. He is a Virginian. In 1887-1888 he was Surgeon of the Farmville

(Va.) Guards, and in American-Spanish War, he served as Major and Brigade-Surgeon of the Seventh Army Corps.

The American Surgical Association

Is in session in the Auditorium of Jefferson Hotel, Richmond, Va., as we go to press, under the Presidency of Dr. William H. Carmalt, of New Haven, Conn. About one hundred are in attendance, including a number of the most distinguished surgeons of America. Drs. L. C. Boshier and George Ben Johnston gave handsome receptions. A reception lunch was also given the visiting ladies by Miss Mary Johnston. As indicated by the title of the Association, the papers read and discussed were wholly surgical. With reference to questions of internal diagnosis, one point that most impressed the physician in hearing some of the papers and discussions was the idea to cut open and see what is the matter, for signs and symptoms and clinical analyses, etc., are often unreliable. Such seemed to be the prevailing doctrine.

American Medical Editors' Association.

The annual meeting of this Society will be held at the Auditorium Hotel, Chicago, on May 30th, and June 1st. An extensive and interesting programme has been prepared and every member of the Association is urged to be present. Editors of medical magazines not now affiliated with this Society are also invited to meet with them.

This is State License Pay Month in Virginia.

We wonder if any Virginia doctors are saying or thinking bad words as to the failure by the recent Legislature to remove State license taxes from doctors of medicine. Let us advise all to go to church, and keep their religion until after the next Session of the Virginia General Assembly.

A Good Location

For a good doctor. I have been located in Fredericksburg for twelve years, and have a good practice, to which I would introduce the man who rents or buys my place. If you are interested, you had better come at once.

B. HALES, M. D.

Fredericksburg, Va.

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Original Communications.

GALL STONES.*

By SAMUEL LILE, M. D., Lynchburg, Va.

I will confine myself to a brief description of causes, varieties, formation, diagnosis and symptoms of gall stones and give medical and surgical treatment therefor.

Causes. The microbic origin of biliary and other calculi was first suggested in 1886 by Galippe. In 1890 Welch found the bacillus coli and staphylococcus pyogenes in gall stones; and in 1896 Hanot and Milan discovered the bacillus typhosus. Bile of all animals under normal conditions, has proven to be sterile, but when pathological conditions exist, even remote from the gall bladder, bacteria are apt to be found therein. If the bile does not escape freely through the common duct, an ascending infection from the duodenum may speedily occur. Although normal bile under normal conditions is sterile, this does not necessarily prove that the entire bile tract is sterile, for it has never been positively proven that the common duct from the ampulla of Vater to the duodenum is ever sterile, but the free flow of bile through the common duct prevents any infection; but the speedily developed infection above referred to, may occur when it does not flow freely.

The bacillus coli communis is found most frequently in gall stones, and the typhosus bacillus next in frequency. The bacillus coli, naturally inhabiting the intestines, are ever ready to ascend the common duct from the duodenum, whenever there is bile stasis; so in typhoid fever cases, the typhosus bacillus stands ready for the attack, under similar circumstances, and this is why gall stones are so frequently found after attacks of typhoid fever.

To sum up, it seems positively proven that

*Read before the South Piedmont Medical Society, at South Boston, Va., January, 1908.

gall stones are due to sub-acute inflammatory changes in the mucous membrane of the gall bladder, either accompanied or followed by bile stasis, plus infection with some micro-organism.

Bacteria may enter the bile passages by two routes; along the common duct from the duodenum or through the blood, chiefly through the portal vein. Age and sex play an important role in gall stone disease. It occurs most frequently after fifty years of age, and females are five times more susceptible than males. This may be due to compression from the corset, etc.

Formations Galen conceived the idea that gall stones were the result of coagulation of bile, induced by increased heat in the liver, and this belief was almost universal until comparatively recent times. Morgani, and following him other writers, attributed chronic catarrh of the mucous lining of the gall bladder and bile ducts as a causative factor. Later it was shown that the chief constituents of gall stones were cholesterine and bilirubin-calcium, and that these substances were derived from the mucosa of the gall bladder, but something was necessary to cause a precipitation, or stone formation. Further study developed the fact, that a slight sub-acute inflammation of the epithelium, with probably an increased outpouring of the mucous, with bile stasis, plus infection, was the cause. This slight cholecystitis, necessary to the formation of gall stones, may be produced by injecting some chemical irritant or micro-organism into the gall bladder.

Signs and Symptoms:—Gall stones are found in about 10 per cent. of all bodies examined post mortem, while only about 10 per cent of these have ever given trouble sufficient to be recognized.

This infrequency of recognition is often due to the fact that they rarely give any of the

formerly recognized symptoms of gall bladder trouble, namely—gall stone colic and jaundice, but the history of a long series of operative cases shows that they do not give the now recognized symptoms; namely, epigastric pain, nausea and vomiting. Indigestion, gastric spasms, and flatulent distension of the stomach are the most frequent symptoms. Unfortunately they all refer to the stomach, and are thus misleading.

The symptoms requiring especial discussion are: *Pain, colic, nausea and vomiting; jaundice, fever, and tumor.*

Pain.—Pain—not colic—from the pressure of gall stones, is either local or referred. There are two types of localized pain; a dull aching, limited to the gall bladder, due to increased tension, the result of inflammation, and an acute, intolerable pain due to a more widespread inflammation and an intense infection. The referred pains radiate to the sub-scapular regions, more often to the right, to the neck, down the arm and to the epigastric region. Those about the sub-scapular region are often called liver pains, without any intimation or knowledge as to the true conditions of the liver.

Colic.—Gall stone colic comes suddenly, increases rapidly in severity, becomes spasmodic. The pain radiates as above mentioned. This pain is due to the effort of a stone to pass through one of the ducts, or the sudden blockage of a duct, producing exaggerated muscular effort in the duct, to rid itself of the foreigner. It occurs only when the stone moves; stones remaining in the gall bladder never produce gall stone colic.

Nausea and Vomiting.—These are the most frequent manifestations of cholelithiasis, and are the chief causes for the unjust burden being laid upon the stomach. Moynihan says if one wished to form an epigram, he could say with truth, "that the most common symptom of gall stones is indigestion." The nausea and vomiting in these cases is purely reflex, being due to inflammation and distension within the gall bladder and ducts. The same is seen in cases of acute cholecystitis. It should ever be our duty with all cases of chronic dyspepsia, or with repeated attacks of nausea and vomiting, to consider the probability of the existence of gall-bladder disease.

Jaundice.—If jaundice occurred more frequently in these cases, the condition would be more easily and frequently recognized, but unfortunately, it is a rare symptom. Complete obstruction of the hepatic or common duct is necessary to the development of jaundice. This can be produced by a very large stone in the cystic duct, making pressure on the common duct, or it may be the result of inflammatory swelling therein. Jaundice due to gall stones is, almost without exception, preceded by gall stone colic.

It may also be, and often is, due to disease not directly connected with the gall bladder, as in malignant disease of the liver or head of pancreas; but in these latter, there will be no remission or intermission, but a steady and progressive deepening of the yellow.

Murphy claims that only 14 per cent. of his operative cases ever had jaundice.

Fevers.—Fever caused by infection due to gall stones is characterized by its abruptness. It rises to the maximum of 101 to 104 degrees F., rapidly, and with almost equal speed returns to normal. Murphy speaks of this rise in temperature as the "temperature angle of cholangic infection." It may rise in an hour to 104 or 105 degrees, then drop as suddenly to normal, remain so for a few hours, days or weeks then recur and go through the same rapid variations. In later stages of acute gall stone disease, when the infection has spread to the finer bile channels in the liver, the temperature may show no remissions, but remain persistently high, and then the plight of the sufferer is serious indeed.

Tumor.—A tumor of the gall bladder in cholelithiasis may be due to an obstruction in, or pressure on the cystic duct, or to a twist or flexion at the neck of the gall bladder, or to an enlargement, simple or malignant, of the head of the pancreas; and some observers have seen tumors due to distension of gall bladder with stones.

Courvaisier's law is "That a distended gall bladder, with chronic jaundice, is due to an obstruction other than gall stones." A tumor is usually easily recognized, lying just in the gall bladder region, and is seen or felt to move up and down with expiration and inspiration, showing its intimate connection with the liver.

Differential Diagnosis:—Cholelithiasis may be confounded with gastric ulcer, or rarely carcinoma of pylorus, duodenal ulcer, inflammation of the pancreas, appendicitis in its varied forms, diseases of right kidney (especially calculus), or the kinking of the ureter or vessels which produce Deit's crisis, lead colic, affections of right pleura or lung, and the gastric crises of locomotor ataxia. The greatest difficulty in differentiation will be found in cases of gastric or duodenal ulcer. In some cases, both diseases may exist at the same time. In almost all cases of gastric and duodenal ulcer, there is a relationship between the taking of food and the onset of pain. In gastric ulcer the pain begins in one, two or three hours after taking food, while the pain of duodenal ulcer is almost instantly relieved by taking food. The pain from gastric or duodenal ulcer is usually in the middle line of the epigastrium while that from gall stones is to the right.

The confusion with appendicitis occurs only when the appendix is abnormally situated as when it lies along the ascending colon with its tip towards the liver, or when a general or localized peritonitis exists on the right side, and is located over neither organ.

Renal colic will not be confusing ordinarily, for its pain radiates down the ureter, into the scrotum, vulva or thigh. This with the associated urinary changes, will usually enable a correct opinion to be given.

Remote Consequences of Gall Stone Disease—The chief remote sequels are, biliary fistulae and their consequences, perforation into the peritoneal cavity, and intestinal obstruction.

Biliary fistula may form between any part of the bile tract, and any of the hollow internal viscera or skin.

When perforation occurs, the pain is sudden and intense, very like that of the perforation of a gastric ulcer. It cannot be localized, for it spreads all over the abdomen. Prostration, collapse and vomiting speedily follow; the abdomen, at first rigid, now becomes distended; flatus ceases to pass, the pulse becomes irregular. In this, as in all forms of perforation within the abdomen, after a few hours, the patient may rally and does seem better. This is often misleading, even to the doctor, as it carries the hope that the patient is better. This hope will soon be blasted, however, as the ab-

dominal distension increases progressively and soon fluid is discernible in the free peritoneal cavity. In such cases, prompt and skillful operative measures offer the only hope.,

Obstruction of bowel due to gall stones does not differ materially from that due to other causes.

Treatment.—In the acute attacks, particularly of gall stone colic, the first thing necessary is to relieve the pain. This is usually done by hypodermic injections of morphine, hot applications over the seat of pain, and probably a general anesthetic followed by an active cathartic. As to the curative properties of drugs, I am very skeptical. Within the next decade, gall stone disease will be a surgical disease, just as surely as appendicitis *ought* to be today; therefore, it behooves us all to study carefully all of its signs and symptoms, so as to be ever ready to deal with it as such—remembering always, that preparedness and observation insure success in all of the affairs of life.

The therapeutic problem is not merely to lessen pain, etc. but to remove the inflammatory condition and the risk of infection. This can be done only by preventing the stagnation of bile, inflammatory condition and infection; and this, I do not know how to do, save by keeping the bile flowing freely with purgatives and regulation of dress and habits.

The first operation for gall stones on a living subject was done in 1618, but little attention was paid thereto, and little work of this class was done until within comparatively recent times.

As the technique in all abdominal operations with minor exceptions, should be the same, I shall not go into the details of preparing the patient, the operator or his assistants for operative work, but will speak of only a few matters that I fear are neglected by those of us who do general practice as well as surgery. We should never operate in the same clothes that are worn about the streets or roads, even if they are covered with a sterile gown, unless we first don a surgeon's sterile rubber apron, or an oil cloth apron which has been made thoroughly antiseptic; then cover this with the regular sterile gown. Nor should we operate without sterile rubber gloves.

Think of the many, many infections and contagious diseases, pus cases, etc. that we attend; the dust and mud through which we go, and the importance of this will be appreciated.

In all operations, the position of the patient has much to do with the ease and comfort of the operator and the success of the operation. In the operation for gall stones or bladder disease, the position is all important. The patient should lie on his back, with a sand-bag placed under him at right angle to his back, and at about the level of the liver; and tilt the table so as to lower his feet about six (6) inches.

In this position, the bowels gravitate to the lower part of the abdomen, and the liver is pushed downwards and forwards and becomes the most prominent part of the front surface of the body, and is readily accessible. This position causes great tension on the abdominal muscles, and has been objected to by some operators, but it is so essential to good and easy work that the disadvantages thereof need not be considered.

Assuming now that everything is properly sterilized, the best incision is made just within the outer margin of the right rectus muscle, through the skin and cellular tissue; then separate the muscular fibres down to the peritoneum, then incise the latter. Long incisions may give trouble, but my rule is to make all openings sufficiently long to allow plenty of working space. Now make a preliminary exploration to determine the existing condition and outline what is to be done; but before doing it, fill in the right kidney space with a large flat gauze swab, letting it run in between the common duct and the duodenum on the inner side, and the abdominal wall on the outer. Then fill in with other swabs so as to cover all exposed peritoneal surfaces. Free the liver and gall bladder and all the ducts from adhesions; then with a piece of gauze in hand, seize the liver and gently pull downwards. If the liver can be pulled down, it is an easy matter to turn up its lower border, so that its under surface looks almost directly upwards, thus facilitating any and all operative work thereon. Ligate all bleeding points as you proceed, particularly if there is jaundice. Now open the gall bladder and explore all of the ducts. After

this you are ready to do any kind of an operation your judgment dictates. If the gall bladder is infected, drainage is necessary; otherwise the incision can be closed with Lembert sutures and dropped into the cavity. Should drainage be used, be sure to have it in a sufficient length of time, at least until the sutures holding it become loose in the tissue. Rubber tubing or the cigarette twine is the best form of drainage material. If no drainage is used, sew the abdomen up in layers, being careful to well approximate the tissues, but avoid too great tension on sutures as stitch abscesses are so often due to the constriction thus produced. If drainage is used, sew closely to the drainage tube from above and below in the manner above described. Put on thick outer dressing held on with adhesive strips, and over these, put on a well fitting, many tail bandage drawn fairly taut, to give support to the wound in case of vomiting.

I neglected to say that before closing the wound, remove the sand-bag and get rid of the tension on the abdominal muscles. After the patient is returned to bed, elevate the head and shoulders. The outer end of the drainage tube is fitted into a 16 oz. bottle and fixed to the dressing by a safety pin.

The patient is allowed nothing by the mouth for eight hours; then one half ounce of hot water at half hour intervals, if the stomach proves tolerant; otherwise, another interval of two hours is allowed to pass; then try again. As soon as the stomach will retain it, it is allowed freely. Nothing is given to quiet the nausea and vomiting following an anesthetic. No food is allowed by the mouth until the bowels act, but should nourishment be indicated, I order it given by enema. Morphine is rarely ever given after an abdominal operation, but some hypnotic may be given by enema and is often very beneficial. Keep the mouth and teeth clean with some antiseptic mouth wash. The dressings are not changed until the eighth day unless soiled by the leakage of bile thereon or some infection occurs.

It must be remembered that many cases operated on for gall stones will have passed the meridian of life, and old people do not bear close confinement with safety; hence it is well to have them sit up by the third or fourth day.

DIAGNOSIS AND TREATMENT OF COXALGIA.

By KARL OSTERHAUS, M. D., Norfolk, Va.

Late Resident Surgeon at Hospital for Crippled Children,
Baltimore, etc.

In presenting this article it is not my intention to bring up any new points in regard to a subject already so thoroughly studied and discussed, but rather to impress on the general practitioner and family physician the importance of the early recognition and prompt institution of treatment of this, one of the commonest and most trying of the diseases of childhood and early adolescence.

It is peculiarly distressing to see a child or young adult with a shortened or deformed limb, especially since by early diagnosis and efficient treatment many of these cases could have been greatly benefitted or cured; and naturally we ask ourselves who is to blame for this astonishing neglect. Doubtless the parents in many instances are at fault, attributing the early symptoms to awkwardness; but how much more often is it the general practitioner who must shoulder the responsibility—either failing to correctly diagnose the trouble, or to carry out efficient treatment.

Nor is the orthopedic surgeon himself entirely blameless in some of these cases, as errors in diagnosis, in judgment as to operating, or too early discontinuance of treatment are not infrequently responsible for the deformities met with. Seldom, however, is the patient brought to the surgeon at the onset of the disease—usually having passed through the hands of a general practitioner first; and so it is to him we must look for thorough examination and careful observation of every suspicious case. In 75 per cent. of the cases of tubercular ostitis of the hip which have come under my notice, there was a history of treatment by the family physician for slight rheumatism or "growing pains," and in many cases the parents were assured that the child would soon outgrow the trouble.

This is scarcely conceivable when we realize the frequency with which this disease is met. Of all tubercular bone lesions, 90 per cent. are found in children, probably on account of the immature and vascular condition of the epiphyses which are usually the parts first affected. (R. T. Taylor) According to the statistics of the Children's Hospital, Boston, of 5,950 cases

of joint tuberculosis treated there, 2,281 or over 38 per cent. were cases of tuberculosis of the hip-joint. Of 1,412 cases of all surgical diseases treated at the Hospital for Crippled Children, Baltimore, during the year 1905-1906, 146, or about 10 1-3 per cent. were cases of coxalgia. From these figures it may easily be seen that this affection is far from being an uncommon one.

In making a diagnosis of this condition the history of the case is of the greatest importance and should be carefully gone into. In about 75 per cent. of the cases, there is a family history of tuberculosis, and in about the same percentage there has been some injury, perhaps slight, preceding the onset of the symptoms, as a rule, by several months. That this last is of importance is disputed by many eminent authorities, but to my mind it seems to be a rational supposition that by some slight injury to the hip (or any other joint) a point of least resistance is established, favoring the lodgment and development of the bacillus tuberculosis. As a rule the disease begins insidiously, though a sudden onset of acute symptoms is not rare. A history of "morning lameness," indisposition on the part of the child to play and run about, gradual loss of weight, slight morning and evening temperature, and later, "night-crises" and pain referred to the knee-joint, should make us extremely suspicious, and the most careful examination should be made. This ought to be conducted with the utmost care and gentleness, and force is under no circumstances to be used. In young children, voluntary resistance to manipulation is not to be confused with muscle spasm.

I wish now to take up as briefly as possible the important symptoms on which we must place our chief reliance for an early diagnosis.

Muscular spasm, (stiffness of the joint or limitation of its normal range of motion) is present to a greater or lesser degree in every case of tubercular hip disease, and may be said to be an involuntary effort on the part of the surrounding muscles to protect the joint from injury. Later, it is probably due to reflex action of the muscles through irritation by products of the disease. It is one of the first manifestations in hip disease, and in no other

affection of the hip is it so well marked so early. In the initial stages there may be fairly free motion at the joint within a certain arc, but when the limits of that arc are reached we get resistance to further manipulation. Limitation of motion in hyper-extension and outward rotation are usually the earliest manifestations of coxalgia, but these are soon followed by limitation of motion in all directions.

The lameness in hip disease is not a constant factor in the initial stages. There may be a hardly perceptible limp, unnoticed by the parents, or noticed only when the child first gets up in the morning and disappearing during the course of the day, or the symptom may be quite well marked. Its absence would not justify our saying that there was no disease of the joint.

Abnormal positions of the limb are quite often met with early in the disease, due to muscular spasm. This, if noticed by the patient or parents, is usually described by them as "one leg seems longer or shorter than the other." It is due to spasm of the irritated muscles drawing the thigh into abduction or adduction, more commonly the latter. This "apparent shortening" is to be distinguished from "actual shortening" of the limb due to bone atrophy or actual destruction of the head of the femur or acetabulum. "Apparent shortening" or lengthening of the limb is caused by the compensatory tilting of the pelvis, upward or downward as the case may be, in the effort to maintain the normal relation between the pelvis and thighs. Normally in standing the pelvis is at a right angle to the body. When the thigh is abducted the effort is involuntarily made to retain the normal balance, and the pelvis is tilted downward toward the affected side. For the same reason the leg is apparently shorter when adduction is present—the pelvis being tilted upward from the affected side. The apparent length of the limb is measured from some flexed point in the middle of the body, usually the umbilicus to the internal or external malleolus of the ankle. If there is apparent lengthening, the thigh is adducted, and *vice versa*.

The real or actual shortening of the limb is due to atrophy or retarded development of the bone, or to actual destruction by the disease of

the head of the femur or upper part of the acetabulum. This form of shortening is measured from the anterior spines of the ileum to the corresponding internal or external malleoli. Normally a line drawn from the anterior superior spine of the ileum to the most prominent part of the tuberosity of the ischium of the same side should pass just above the upper border of the trochanter major of the femur. If the trochanter is found to be on or above this line (Nelaton's line), bone destruction of greater or lesser degree is the rule. Lovett, of Boston, has compiled a table in which, by finding the difference in inches between the real and apparent shortening, the angle of deformity may be found exactly in degrees; and as this is a most important index to the progress of the disease it should be carefully estimated at regular intervals. "If the practical shortening is greater than the real shortening the diseased leg is adducted; if less than the real shortening it is abducted." (R. W. Lovett, *Boston Med. and Sur. Jour.*, March 8, 1888.)

Atrophy of the leg and calf of the affected limb is extremely suspicious when taken in conjunction with other symptoms, but in itself is not diagnostic, being often associated with other inflammatory conditions of the hip. It is always present in coxalgia.

Swelling is one of the most important and characteristic symptoms of tubercular coxitis in its early stages. Probably in no other affection of the hip-joint is thickening over the front of the joint or behind the greater trochanter so marked in the beginning. It is, however, a rather difficult sign to make out and is very apt to be overlooked, but deep palpation over the front of the joint of each limb will usually show some difference. Thickening of the greater trochanter itself is extremely significant.

Pain in coxalgia is very variable, and its presence or absence is no great aid in making a diagnosis, except in connection with other symptoms. In the initial stages it is often absent or is manifested only at night by "night-cries" which are usually unaccounted for by the parents. The pain may be sharp and shooting in character, brought on by a sudden movement or jarring of the limb, or it may take the form of a dull, continuous ache relieved only

by traction upon the leg. In some cases there is perhaps only slight pain on rising in the morning, or merely a sense of stiffness or discomfort, which passes off during the course of the day. Not infrequently is pain entirely absent at the onset of the disease. When present it is almost invariably referred to the inner side of the knee joint. Jarring the hip by striking the heel and thus forcing the head of the femur into acetabulum to find out if the seat of pain is in the hip or knee is an uselessly brutal and unnecessary method of procedure, though one greatly favored by many general practitioners. Absence of pain in such a case would not exclude hip disease.

Quite a number of affections may be confused with hip disease and should be carefully guarded against. Chief among these may be mentioned synovitis of the hip due to rheumatism, trauma, or to no apparent cause. This condition simulates so closely hip disease in the early stages that a diagnosis is almost impossible. It differs only in that it runs a much shorter course and usually follows closely after an injury, though too much stress should not be laid on this latter point. There is usually no history of gradually increasing previous disability such as is commonly associated with coxalgia. Neither is thickening over the front of the joint in the early stages as marked as in hip disease. The symptoms as a rule pass off in from four to six weeks. In any case the treatment is the same, but the patient must be carefully watched.

Lumbar Pott's disease may readily be confused with hip disease in some cases, as often the first symptoms of the former disease are a slight limp and limitation of motion at the hip joint. Irritation and contraction of the psoas muscle on one or both sides will cause the flexion deformity, but motion at the hip in lumbar Pott's disease is usually free except in hyperextension. Limitation of abduction, one of the earliest symptoms of coxalgia, is not often present in Pott's disease. In hip disease there is rarely rigidity of the lumbar spine on attempts at flexion of the spine, but in some cases in which the joint is very tender, irritability and spasmodic contractions of the erector spinæ muscles will cause lumbar rigidity. It is very hard to distinguish between the two at

times, and a diagnosis of hip disease should never be made until after a careful examination of the spine. In some cases of Pott's disease a descending psoas abscess will involve the hip-joint or so irritate it as to make it a matter of doubt whether the symptoms are due to Pott's disease or to a focus in the hip-joint.

Hysterical affections of the hip often produce symptoms similar to those in coxalgia. There is sometimes marked rigidity and the patient complains of pain on the slightest movement of the limb. Pain, however, is nearly always referred to the hip instead of the knee as in true hip disease, and unconscious movements of the limb are much more free. Hysterical hip is not common in children.

Arthritis deformans and rheumatism rarely occur in one joint in children, other joints being usually involved. It is astonishing, though, how often hip disease is mistaken for rheumatism, and I have now under my care a child who for two years prior to my seeing her had been treated by a general practitioner for rheumatism, in spite of the fact that flexion and adduction of both hips were extreme; there was an entire absence of motion in either joint, and there was a large, fluctuating abscess on each side.

Osteomyelitis of the hip-joint runs a very much more acute course, the onset being sudden, the temperature of a septic nature and range and the swelling and tenderness much more pronounced than in tuberculous coxitis. Coxa vara, congenital dislocation of the hip, sarcoma, and separation of the femoral epiphysis may be excluded by X-ray examination and the history of the case. Knee-joint disease, which is sometimes confused with hip disease may be excluded by a careful examination of both joints.

Examination of young children is often attended with much difficulty and voluntary resistance to the manipulation must not be confused with muscular rigidity.

Treatment.—The two methods of treating coxalgia are the mechanical and the operative. There is a wide difference of opinion amongst surgeons as to which it is proper to employ in the early stages, some holding that the diseased foci should be eradicated as early as possible

by open operation, while the majority believe that operative procedures should only be attempted after mechanical treatment has failed, or where the disease is so extensive that the latter method would be useless.

MECHANICAL TREATMENT.

In the conservative treatment of hip disease the end to be sought for is the greatest possible freedom of movement at the joint with the least possible deformity. To gain this end, traction, fixation, and protection of the diseased joint are absolutely essential. As the ways of obtaining these conditions differ to some extent, I will only attempt to describe my own, believing as I do that my methods follow closely those employed by most of the leading orthopedic surgeons of this country.

In the acute stages of the disease, treatment must be directed towards overcoming the muscular spasm, separation of the opposing bony surfaces, and putting the joint completely at rest. This may be accomplished by placing the patient flat on his back in bed on a Bedford frame, and, by means of webbing straps or twill-cotton aprons, fixing the shoulders and pelvis. Traction is applied by means of a weight and pulley at the foot of the bed (Buck's extension), but great care must be taken that the pull is in the line of the deformity; that is, in the line of the diseased limb with the pelvis lying squarely on the frame. Thus, if the thigh is flexed and adducted, as is often the case, the diseased limb must be raised on an inclined plane or pillows until the lumbar spine rests flat on the frame, and then traction is made with the limb adducted. In the same way the other malpositions are corrected. If there is no abnormal position of the hip, it is well to make traction in slight abduction to compensate for any shortening that follows. By applying traction in this way the irritated muscles surrounding the joint are relaxed and there is no resistance to the pull. During this period of recumbency the patient should be moved as little as possible, and the traction should be kept up continuously. It is well to turn the patient over morning and evening and bathe the back with alcohol to keep the skin in good condition, but this can be done without raising the weight. In very acute cases I usually have the bed-frame

rest on wooden blocks at each end, so that a bed-pan may be slipped under the patient between the upper and lower frame-covers, thus avoiding any necessity of moving the child. The amount of weight to be used must be determined by the comfort of the individual, but generally speaking from three to five pounds will be found sufficient. To prevent healing in outward rotation which occurs in so many cases, I generally use a web strap to rotate the leg inward and hold it in the normal position, and also protect the foot from pressure of the bed clothes by means of a wire screen. Counter-traction may be exerted when necessary by raising the foot of the bed, or by the use of long perineal straps which pass through the groins and buckle at the head of the bed or to the top of the bed-frame. This bed-frame is absolutely essential to the treatment as outlined as above, as, without it, fixation and protection of the joint cannot be obtained satisfactorily.

After the acute symptoms have subsided it is wise to begin the ambulatory treatment. In the subacute as in the acute stage traction must be continued, and the joint protected and fixed as nearly as possible, and to meet these requirements some form of splint must be used. A great variety of splints are in use today, but to my mind the cheapest, simplest and most efficient is the Davis splint as modified by Taylor and Sayre; and while it does not afford complete fixation of the joint, still combines more perfectly than any of the others the cardinal principles of traction, fixation, and protection. This splint consists of a steel upright extending from just above the greater trochanter to about two and a half inches below the heel. At this level it turns in at a right angle for a distance of two or three inches to cross the sole of the foot. It is well to have the lower part of the upright with the footpiece adjustable by screws on the upper part so that the upright may be lengthened or shortened as desired. At the upper end this upright is riveted to the pelvic band of thin, flat steel, which grips the pelvis just below the level of the anterior superior spines of the ileum. Close together on the front of the pelvic band are two buckles from which perineal straps pass between the groins to two

buckles on the posterior half of the band. The buckles in front should be on each side of the symphysis pubis and close to it, while those behind should be about an inch or two outside of the posterior superior spines. By means of these perineal straps counter-traction is exerted and it is most important to keep them tight. Traction is applied through adhesive plaster straps which pass around a windlass mounted on the foot piece, and by means of a key and controlling ratchet, the desired amount of traction may be exerted. The splint is completed with leather bands attached to the upright which pass around the thigh and calf. Protection is afforded by crutches and by a raised sole on the well foot, high enough to allow the diseased limb to swing an inch or two above the ground. With less intelligent patients, or those who cannot secure the proper attention at home, it is well to combine the use of a short plaster-of-Paris spica with the splint as advocated by Abbott and Pingree, but this is hardly necessary in cases which can be kept constantly under observation.

After all symptoms have been absent for some time traction may be gradually discontinued, but protection and fixation must be persisted in. I usually wait for about six months after all muscle spasm has disappeared and then apply a long plaster spica reaching to the toes, and continuing the use of the crutches and high shoe. This cast is gradually shortened until it only extends to just above the knee, and if there is no return of symptoms in six months I substitute a convalescent splint. This is similar to the traction splint except that it is shortened to reach just below the heel, and the foot-piece is slotted into the heel of the shoe, thus taking the jar of walking off the hip. In mild cases, the use of the convalescent splint may be dispensed with, and the patient allowed a limited use of the limb, wearing a cast and using crutches. Use of the limb must be begun very gradually, and treatment is to be resumed at the first appearance of any untoward symptoms. It is well to impress on both patient and parents that the treatment of hip disease extends over years rather than days or months, and a cure in the average case cannot be expected in less than two years.

THE OPERATIVE TREATMENT.

The operative treatment of coxalgia is too familiar to most surgeons to require any detailed discussion here. The two operations generally employed are erosion and excision of the joint. In the first, the joint is exposed through a longitudinal incision, and after the capsule has been divided the diseased foci, having been previously located by the X-ray, are thoroughly removed with a sharp curette. If all the necrosed tissue is taken out the wound may be closed without drainage, and a plaster spica or traction be applied. Where there is very little bone destruction, and the foci are easily accessible, I fill the resulting cavity with iodoform bone-wax (Morehof-Mosetig) or bismuth paste, and the results have been excellent.

Excision of the hip is indicated in a steadily progressing destructive process in the joint, which fails to yield to conservative treatment or when life is endangered. The joint is exposed by the ordinary straight external incision, the capsule incised, the bone freed from its muscular attachments, and the head of the femur removed with a saw or osteotome. The periosteum should be saved as far as possible. Any diseased foci in the acetabulum should be removed with a curette, the wound closed with drainage, and traction or a plaster spica applied.

Hip disease is often complicated by the formation of abscesses. It has been my experience that it is bad policy to incise these unless they threaten to evacuate themselves spontaneously. If this seems imminent the abscess should be freely opened and the pus evacuated and sponged out, but not irrigated. It is then closed without drainage. Before closing the wound it will be found useful to cup the abscess cavity so as to completely clean it out and cause a free flow into it of serum from the surrounding tissues, which will tend to hasten the process of repair (Bier). Usually however, abscesses will be absorbed under efficient treatment by traction and fixation.

"Night-cries," which are a frequent complication of coxalgia, will disappear with traction and fixation, they being simply a manifestation of pain.

When the joint is ankylosed in a malposition

Gantt's subtrochanteric osteotomy may be performed. After the bone has been divided the limb is put up in a plaster-of-Paris cast in slight abduction, and in six or eight weeks limited use of it may be allowed. Malposition without ankylosis which will not yield to traction, may be forcibly corrected under anesthesia.

In conclusion I wish to express my firm conviction that thorough conservative treatment should be tried in all cases of coxalgia before resorting to operative methods. I also wish to make an earnest plea for the careful examination and observation of all suspicious cases, even in those in which the X-ray examination is negative, as it almost invariably is in the initial stages. The general practitioner must bear in mind that in many cases time alone will clear up the diagnosis, and in doubtful cases it is far better to treat some other affection of the hip as coxalgia, rather than the contrary.

I have not gone into the tuberculin treatment of this condition as my experience with it has been too limited, but it may not be amiss to state here that the few cases in which I am now using it show the most encouraging improvement.

THE TREATMENT OF EPILEPSY.*

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In the discussion of this subject, it is my purpose to discard the scientific study, or even the mention of the numerous remedies that have been suggested and "found wanting," or that have from time to time been vaunted as "specifics" and been as quickly relegated to the already overburdened list of proposed curative agents which have had nothing, even for an experimental basis often, except the promulgation of a new theory, or the propagation of a novel hypothesis by some self-advertised enthusiast.

In the course of centuries, the intensely interesting fact that no definite cause could be logically assigned for this disease, has led even some of the most earnest investigators into paths of the wildest speculation as to the theoretical bearing of certain remedies upon

some of its manifestations, and in this way, there is scarcely a drug in the shops that at one time or another has not been regarded and recommended as an infallible specific. Unfortunately, all these claims have proved to be false, and we are today as helpless to cure epilepsy with one drug as was our Profession five centuries ago.

Within the past few years, however, there have been marked advances made in the treatment of this disease, and my purpose to-day is not to rehearse the classical therapy of the past but, rather, to discuss only those measures which, in my practice, have seemed to yield such results as would rightfully entitle them to careful professional consideration.

In my personal experience, I have found epilepsy to be one of the most difficult of the Nervous System to treat, and while I believe that the passing years have added to the stock of my general knowledge on this subject, yet it is not possible for me to name any one remedy or remedies that I can rely upon as either curative, or, in any sense, specific in therapeutic effects.

The continued study of this interesting and humanitarian subject has, however, dispelled not a few vague and illusive theories of mine and has taught me many practical lessons.

It has taught me in a general way in the treatment of this disease: (1) that the idea that nothing can be done by us for the epileptic has for too long prevailed, and that it is high time that the poor unfortunates, as well as the laity, be informed that symptomatic epilepsy can be, and is often cured, but the cure of idiopathic is rare, I personally having, however, cured a case; (2) that the want of interest, and frequently the carelessness manifested by physicians themselves in this class of patients, often discrediting their own ability by dismissing these patients with a prescription as useless, as their prognosis is hopeless, is unwarranted and unworthy of their achievements in the battle against other diseases, which in the near past have been apparently as hopeless as this, notably consumption, Bright's disease and many forms of paralysis, but which under the increased interest, zeal and research of the Profession have now come to be diseases not so much to be

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dreaded as to be combatted; (3) that neither medicine nor surgery *per se* will efficiently and permanently cure this disease, but that we must have the greatest respect for the smallest things, and that this respect must never relax; (4) that the treatment of a single organ in the body for the cure of a disease as violent and as destructive as epilepsy in its essential type, is as unreasonable as it is unscientific, for while an irritant cause may be removed, yet the habit may, and does naturally remain, and neither procedure alone will cure the disease; (5) that the day of routine bromide dosing is happily passing, for the disasters from the remedy, carelessly administered, have been found to be as great, or greater than the ravages of the disease itself; (6) that there are "Epilepsies and Epilepsies," the forms, varieties and subdivisions being many, and that to properly treat epilepsy, its peculiar type and cause must first be carefully and systematically studied; and, lastly, that treatment begun early and long and faithfully maintained, consisting of measures that are prophylactic, hygienic, medicinal and surgical, if need be, hold out the best and only hope for permanent relief from this terrible malady, which makes of its victims, civil and social outcasts, and consequently calls for the most strenuous efforts on the part of the earnest and conscientious physician.

In the study of the individual cases that have come under my care for treatment, I have striven to bear in mind that epilepsy is often a symptom, and that the treatment of each separate case was to be dependent upon the solution of this important question of diagnosis. Is the case in hand symptomatic of a lesion of the brain, of the spinal cord, or of the peripheral nerves; is it an accompaniment of the cerebral palsies of childhood, or does it bear a distinct relationship to heart disease, nephritis, malnutrition, or marked disturbances of the gastro-intestinal tract, the sexual organs, or the eyes?

Again no two cases are alike, almost every one having its own peculiarities, and it is often a most difficult task to decide whether the attacks constitute alone the disease, or whether they are merely a symptom of a primary affection which is attended with still other man-

ifestations; and the determination of this point also influences the proposed line of treatment.

These facts settled and organic lesions excluded, the matter of treatment is determined; and briefly speaking, this resolves itself into prophylactic, constitutional and specific measures, according as the disease appears to be symptomatic, or genuine epilepsy.

Prophylactic Treatment—The first and essential rule of treatment, which is applicable to all classes of cases, is that, remembering that the epileptic age is from five to fifteen years, that when there has been a convulsion, and especially a recurrence of a fit between the ages of five and ten, the case should excite apprehension and should call for the most diligent treatment, and this treatment should be kept up constantly for at least three years after all attacks have ceased. I believe this to be a most important point which is often overlooked by the practitioner, and especially by the family physician.

Constitutional Treatment—This method of treatment seeks to use those agencies which tend to decrease neuroglia proliferation and increase vasomotor tonicity of the system.

Arsenic, mercury and iron, the albuminate or peptonate, fulfil the former indications, and the use of water, by means of cold sponge baths, wetpacks, showers, jet douches, etc., according to the opportunities of the patient, fulfil the latter.

Daily work in the open air, or at a trade that is congenial, has also been found to be mentally, as well as physically hygienic, and quiets and steadies the nervous system, sometimes absolutely checking the disease.

The next most important factor in the line of constitutional treatment is the edimination of the waste products of the system, and the consequent prevention of autotoxic conditions from intestinal decomposition.

This is best obtained by an absolutely aseptic and non-irritating dietary, with diminution of salt, such as milk, meats in moderation and eaten slowly, and bread. Proper attention to the frequent constipation and dyspepsia, is, of course, necessary.

Hydropathic methods, by means of Baruch baths, if obtainable, hot packs, the free inges-

tion of large quantities of water between meals, etc., are most important adjuvants to this end. Sinusoidal electricity, if available, is also to be recommended as an efficient agent in assisting metabolism and correcting specific systemic poisoning.

In my opinion, our profession has not laid sufficient stress upon the toxic condition which exists in so many of our patients suffering from this disease, and which arises from deep-seated errors in the fundamental principles of nutrition. If we would apply to many of these cases, the maxim of "Clean out, clean up, and keep clean," which has for the most part, and I believe very illogically been relegated almost entirely to the realm of Surgery, and insist furthermore upon our patients learning the value of work, which would bring about a self-forgetfulness and satisfaction, if not pride in life, our results would be far more brilliant and much more successful.

In fact, I have seen more than one confirmed case entirely cured by these means alone. The methods indicated imply perseverance, skill and tact upon the part of the physician, but is not the result worth while?

The eliminative method, of course, also presupposes the removal of all external irritants as well, but I believe the importance of reflex irritation has been much over-estimated except the ones arising from the gastro-intestinal tract, as mentioned above, the sexual organs, and the eyes.

It is a useless task, it appears to me, to argue that the treatment of a single organ will cure a destructive disease like epilepsy, which in its very nature must affect the whole body, and consequently, clipping eye muscles, for example, would not in my estimation be expected to cure anything more than a pseudo-epilepsy.

Generally speaking, not only must the cause be removed, but there must be a correction of an established habit. The physician has here a double problem to solve, and should not be satisfied with the accomplishment of but the half of his task.

Alterative remedies, such as arsenic, sajodin, the iodides, etc. are indicated as "habit-breaking" drugs, and in conjunction with the usual constitutional measures detailed are of great importance for this purpose.

Specific Treatments—Without enumerating the drugs which have held a reputation as anti-epileptics, I will say that the most valuable of the so-called specific drugs are the bromides. All of the bromides act alike in this disease, and if one does not diminish the attacks in number and severity, another will not. They all act alike, also, on the patient's system, all being depressive and destructive, if too habitually used, to the higher nerve centres, and if exhibited for a long period, it often requires a trained observer to distinguish between the symptoms due to the drug and the symptoms from the disease itself.

The abuses of the bromides in the therapy of epilepsy are, in my judgment, often graver than the advantages of the remedy.

I believe that the bromides *per se* are powerless to cure epilepsy, for rationally, a reconstructive, and not a destructive medicine is indicated.

That they have the power to suppress the convulsive phenomena, and occasionally for long periods, no one will deny, but I contend that suppression of the convulsions alone is not the cure of the disease, and that it is irrational and illogical to give such a remedy without regard to the cause or the type of the disease being treated.

Its careless administration and wholesale employment have, I repeat, produced drug symptoms as dangerous, as debilitating, and as destructive as the disease itself.

Its guarded use, however, I believe to be necessary in most cases, but would insist upon as small doses as possible to control the convulsive seizures, and give this dose always largely diluted with water, preferably aerated, and while so doing, never neglect for one day the skin and the bowels of the patient.

It is not necessary to produce "bromism" to get beneficial results; it is better not to do so.

It is well to remember too, that anemic, nervous epileptics who lead a sedentary life are improper subjects for the bromide treatment, the ferrocyanide of iron being a more suitable remedy.

The bromides lessen the fits in about 85 per cent of cases, and do no good, or actual harm, as regards frequency of attacks, in from five to ten per cent of cases. The best bromide

salts, in my experience, are those of strontium, and sodium, as these are usually best and longest borne by the stomach, though occasionally a change or combination appears to be advantageous.

One of the best adjuvants to the bromides, as Seguin pointed out, is chloral hydrate in very small doses, or the eyes and stomach of the patient may become affected.

Children bear proportionately large doses of the bromides, and if an adjuvant is required to control the fits, oxide of zinc is useful.

In some of the special forms of epilepsy, certain other remedies have special value, such for instance, as urethane, or the actual cautery in the Jacksonian type, sodium salicylate in the lithemic form, etc.

As a rule, it is best not to use counter-irritants in the usual types, nor is it well to use such remedies as nitrite of amyl to prevent impending attacks. In status epilepticus morphine is dangerous—venesection and large chloral enemata yielding best results.

Surgical Treatment—In the vain hope of effecting a cure in many cases of long standing which were uncontrollable by bromides, regulation of diet and mode of life, physicians of a generation ago were prone to suggest "surgery and see what would happen." This spirit of expectancy, and, in a sense, of desperation has not yielded satisfactory results, and it is an interesting index of how completely the standpoint of generations ago has been changed, when now many efficient and fearless operators recommend conservatism in the surgical treatment of even traumatic epilepsy. This tendency to differentiation of the cases is a wholesome sign of thoughtful conservatism, and will save us in the future from the necessity of apologizing for reckless interference.

The old operations of ligation of the carotids and of the vertebral arteries have long since been discontinued.

With our present knowledge of Cerebral Localization, cases caused by removable intracranial lesions should be operated upon, if the localization of the latter can be definitely made and the convulsions constantly occur in the same group of muscles and extend in a characteristic manner, or if transient hemipareses occur; but the nature of the lesion should

always be determined, as well as the accessibility of the area, before surgical intervention is advised.

Whenever the disease can be distinctly and directly traced to a blow on the head, the question of trephining should be considered, and with such a history of fracture, or even evidence of severe head injury with directly resultant symptoms of the disease, trephining is justifiable.

It is exceedingly questionable, however, whether the epileptic habit can be cured by an operation of any kind. On the whole, and briefly stated, surgery can do but little for acquired, and nothing for idiopathic epilepsy.

The Colony Plan representing, as it does, the best features and in the best manner, of the points in the line of treatment already detailed, has been proved to be the most eminently scientific, systematic and successful method in the treatment of this disease.

EPIDEMIC INFLUENZA OTITIS MEDIA, SEQUELLAE AND TREATMENT.*

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Whenever there is an invasion in the community by epidemic influenza, it is found that it manifests its effects to a greater or less degree upon one or more of the accessory sinuses of the head, viz.: the frontal, maxillary, ethmoidal and sphenoidal. Of these cavities, the frontal is the one most frequently involved. Instead of guaranteeing immunity from another attack, this disease renders the subject more liable to its influence. Persons having some previous ear trouble, or a predisposition towards it, are very liable to have their ears affected by this malady, or it may cause some latent trouble to become active. This disease has a predilection for the ears, and the gravity of its effects upon them has been clinically demonstrated, especially during a large epidemic, like the one which recently visited this city. The ears are sometimes affected at the beginning of the attack, and sometimes a week or more after the disease has begun. The otitis at the beginning of the disease is usually

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due to the direct invasion of the influenza bacilli.

There is something in the effect of this germ on an ear that formally discharged, but had not done so for a year or more, that will cause it to become active, and cause abscess of the mastoid bone or the brain; sometimes both structures are affected. After the disease has been in progress for a week or more, the secretions from the nose and naso-pharynx may find their way into the middle ear, through the Eustachian tube, and cause congestion, oedema, and other pathological conditions, which finally result in a suppurative otitis media. It is therefore the fact that whether the ears are attacked at the beginning or later in the course of the influenza, an otitis media is the usual result, which often extends to the mastoid bone, causing a mastoid abscess.

A suppurative otitis media caused by influenza differs from the same condition from other causes, in that the prostration and pain are greater, there is more fever, a greater tendency towards mastoiditis, and frequently a different appearance of the drum membrane. This membrane is bulged outward and covered with small blebs, which seem to be in the middle layer; the malleus is invisible. These blebs disappear in about a day, leaving small circular and semi-circular hemorrhages, which seem to occupy the place where the blebs were. When a perforation occurs there is an escape of bloody serum, often a hemorrhage; in many cases quite a profuse hemorrhage preceded the discharge. The discharge, thin at first, soon becomes thick; is usually quite bloody, and remains so for several days.

The symptoms of an otitis media due to epidemic influenza are similar to those due to other causes, except that they are usually more severe. The pain in and around the ear is very intense, boring and throbbing in character; the prostration is very great; the fever is not very high except where the sigmoid sinus is involved or meningitis occurs. Even when the mastoid is implicated the temperature is not high unless there is enough pus absorption to cause septic fever. Sometimes a pronounced rigor occurs at the beginning of the otitis. Nausea and vomiting occur in some cases, which have caused a diagnosis of meningitis to be made. The pain in the ear often remains

after the perforation has occurred, or, if not constant, it comes on at intervals quite severe at times. This is different from the pain of an acute otitis media due to ordinary causes; that pain usually disappears, and does not return after the drum membrane ruptures, unless the rupture closes. The nearness of the brain and its membranes to the vascular communications between the ear and the cranial contents may cause such symptoms of cerebral irritation as periodical stupor, which may develop into coma, spasms of the muscles and occasionally epileptic seizures. There is more or less edema and pain on pressure over the mastoid bone.

As before stated, there is greater tendency towards mastoiditis than when the otitis is due to the exanthemata or other causes. The secretions containing the micro-organisms find their way to the antrum and mastoid cells, causing mastoid abscess. Complications such as thrombosis of the lateral sinus, abscess of temporo-sphenoidal lobe; dural, epidural, cerebellar abscesses and thrombosis of cavernous sinus may and do occur.

The paths by which the micro-organisms extend to the different structures and cause these complications are the canal of the facial nerve, the aqueduct of the vestibule, and the cochlea, the internal auditory meatus, the petromastoid canal, the vascular and lymphatic structures. Small openings may occur in the bony walls of the middle ear, either congenital or from necrosis. It must be remembered that the roof of the middle ear is a very thin bone, in which one or more small openings may be present, in which case the mucous membrane lining this cavity is the only protection to the dura mater; and the latter the only protection to the brain. The danger of a dural or cerebral abscess complicating an attack of suppurative otitis media can be readily understood. The floor of the middle ear is also liable to have one or more small openings in it, thus exposing the jugular bulb to infection, for the only tissue between the floor and the bulb is the mucous membrane which lines the middle ear.

Chronic suppurative otitis is more prone to cause these complications than the acute form, because the mucous membrane has lost or partially lost its resisting power and the leucocytes do not interfere with the passage of the disease germs through it. It sometimes happens that

thrombosis of the cavernous sinus occurs and a venous stasis is produced by the occlusion of this sinus, which causes a mastoid edema, exophthalmos, ocular paralysis and other serious conditions. Fortunately, this is a rare complication. The character of the mastoid bone is responsible as to the liability of its becoming affected. A vascular diploetic bony tissue is more liable to become affected than a dense firm one not so well supplied with blood vessels. Often the pus burrows through the mastoid bone and out through the tip, causing what is known as a Bezold abscess. Sometimes this occurs, the membrana tympani remaining intact. Perichondritis of the auricle, and of the auditory meatus sometimes occur, which complicates matters very much, and causes much pain, especially during the treatment of the ear.

All of these conditions which I have spoken of, occur from other causes than epidemic influenza, but they are more liable to originate from it, and be more severe in their effects.

The symptoms of involvement of the sigmoid sinus are a cessation of the discharge from the ear, with an increase of pain in the ear and head, a high temperature with marked fluctuations, chills, fever, and sweats. In order to detect the fluctuations, the temperature should be taken every three hours. There is pain on pressure in the upper third of the posterior cervical triangle, with more or less edema. If the internal jugular is thrombosed, one can detect the cord-like formation to the inner side of the sterno-mastoid, and there is pain along the course of this vein sometimes. The jugular, when thrombosed, cannot always be felt in the neck. These are only a few of the symptoms of this complication of suppurative otitis media. There are many others, which in the limited scope of this paper cannot be described.

I would like to emphasize the fact that pulmonary involvement, otherwise a septic pneumonia, sometimes occurs, and which has been thought to be the usual form of pneumonia, because there was no apparent discharge from the ear; consequently, there was no cause to suppose it to be septic in character. The same may be said of a septic enteritis from the same cause, simulating typhoid fever, and thought to be such, for the symptoms, to some extent, are similar. These two complications are more

liable to be caused by an acute exacerbation of a chronic suppurating otitis. From one of those cases to which I referred, where the patient had an old running ear, but had ceased discharging and he had forgotten that it ever discharged, with the attack of grippe, the mastoid bone was invaded by the micro-organisms; an abscess formed, the pathogenic germs extended to the sinus, causing a septic thrombus. The septic matter was carried through the blood to the lungs, forming purulent foci, and causing a septic pneumonia. Or the infective matter may find its way through the Eustachian tube into the stomach and intestines, causing some of the symptoms of enteric fever, such as loss of appetite, furred tongue, bad taste in the mouth, foul breath, diarrhoea, etc. The absence of any discharge from the ear is misleading, and an error as to the etiology of the disease is liable to be made—the ear not being held responsible for the trouble. This is not an overdrawn picture of this phase of thrombosis of the lateral sinus, and if the treatment is directed to the lungs or intestines, exclusively, and the ear overlooked as the cause, a fatal result will be the consequence.

A case I was asked to see had been treated for malaria, because she was having a slight chill, fever, and sweat, every few days. There was no apparent discharge from the ear at the time I first saw her. I recognized it as a mild sepsis due to a thrombosis of the lateral sinus. There was tenderness in the upper third of the posterior triangle, over the mastoid bone, and along the course of the jugular vein, in the neck, I questioned her about her ear. She admitted that it had been discharging a year or more ago. Upon examination I found a perforation in the drum membrane, and with a cotton tipped probe I brought out a drop of foul-smelling pus. I operated on her and found a small clot at the knee of the sinus. She made a good recovery. One week after the operation I found her walking around the room. She said she felt so good that she just had to get up awhile.

In the septic pneumonia cases rigors are usually caused as fresh purulent foci are deposited in the lung. The temperature is high, fluctuating, after which there is usually profuse perspiration. The patient is generally irritable, sometimes quiet, but his cerebration

is quick and good, unless there is some cerebral complication. In some cases there is nausea, vomiting, and occasionally there is an optic neuritis.

Extra dural abscess is the most prevalent of the diseases of otitic origin and occurs more frequently from an acute than from a chronic middle ear suppuration, and is largely caused by the otitis of influenza. An extra-dural abscess occurs more frequently without a perforation of the bony walls bordering on the dura than it does through a perforation. In the cases without perforation, the pus either finds its way through the bone to the endocranium, or passes through the lymph sheaths of the blood vessels. It is often found when opening the mastoid, that after removing the bone the dura or sigmoid sinus has been exposed from caries of the bony walls, without there having been any external evidence of the fact. There are no symptoms unless there is pressure, when there may be dizziness, vomiting, optic neuritis, nystagmus, etc. If the abscess is in the posterior fossa there are no localizing symptoms except possibly a torticollis; if on the left, impediment of speech has been reported. There is rapid alternating of favorable and unfavorable symptoms. After a profuse discharge of pus from the ear, there will be subsidence of inflammatory and meningeal symptoms which were present before the discharge. If the otorrhœa is out of proportion to the capacity of the middle ear to discharge, this would be an evidence of an extra-dural abscess and an indication for immediate operation which, if not done, usually results fatally from the pus invading the brain and causing a lepto-meningitis; this disease runs a rapidly fatal course. These are only a few of the many conditions arising from an extra-dural abscess.

Treatment. The patient should be confined to a warm room, a saline laxative given, and the pain and pressure relieved by a paracentesis of the drum membrane, thus allowing the pent-up secretions free exit through the external auditory canal. The drum membrane should not be allowed to rupture, if possible to prevent it. A drum membrane that has spontaneously ruptured is not so liable to repair as quickly as one in which a paracentesis, under strict antiseptic precautions, is performed. We

see in both private and hospital work many cases of chronic suppurative otitis media in adults, which date back to an attack of one of the exanthemata, influenza or some other cause in childhood, in which the drum membrane had spontaneously ruptured, had never repaired, and a chronic suppurating ear was the result. This is a serious matter, for a discharging ear is a dangerous companion, and exerts an etiological influence to a large percent. of the sequelæ I have spoken of.

The ear should be gently syringed with hot antiseptic solution every few hours, and a piece of antiseptic gauze in the meatus, between the syringings. The ear is then wrapped in cotton and heat applied externally, by means of hot water bottles, hot cloths, or some method convenient at the time. This will usually stop the discharge, and the membrane will heal in a short time, in an uncomplicated case of acute otitis media. If preferred, a strip of antiseptic gauze may be inserted into the external meatus close up to the drum membrane, allowing a bit of it to protrude outwards; this must be changed as often as it becomes saturated with the discharge. Either method produces good results. I prefer the syringing if the discharge is very profuse and thick; I think it removes it better and prevents it drying in and around the perforation and blocking the discharge and rendering it liable to flow backwards to the antrum and cells. When the discharge gets thinner and diminishes in amount, the gauze treatment will secure good results. I instruct the attendant how to syringe the ear, and to do so gently but thoroughly, using a small, hard rubber ear syringe.

In case of spontaneous rupture of the drum membrane, it should be treated in the same manner as when a paracentesis was done. No powder should be used in the ear until the discharge has nearly ceased, and then it should be blown very lightly into the canal so that it will not block up the opening in the drum. No operation should be done in the ear without the field being perfectly illuminated.

In acute middle ear suppuration, the indications of a mastoid abscess are usually quite clear. They are: Edema of the mastoid region, pain on pressure and on the side of head, the auricle standing out from the head quite prominently, fever, restlessness, and a bulging down-

ward of the posterior superior wall of the external canal.

In infants and young children, the pus finds its way from the middle ear, through the ununited sutures of the bone, under the periosteum into the antrum and mastoid cells, forming a sub-periosteal mastoid abscess. The pain and fever are quite severe. This condition demands an immediate operation, and although it is a severe affection, it is seldom fatal if uncomplicated, and the operation is done at once. In the absence of a sub-periosteal mastoid abscess, the two most reliable symptoms for operation are local tenderness over the mastoid antrum, and the sinking downward of the superior posterior wall of the external canal close up to the drum membrane. If the local tenderness persists, notwithstanding the fact that there is free drainage from the canal, or should it increase and the discharge diminish, these are indications for an immediate operation. There is usually tenderness over the mastoid, antrum and tip at the beginning of a suppurative otitis media acuta. These two symptoms coming on at the beginning of the attack do not necessarily call for an operation, if the discharge is free, and the patient suffering but little pain, and not much fever. They may be disregarded as an indication for operative interference, for a couple of days. The same amount of tenderness over the antrum and tip, with considerable pain, fever and a diminution of the discharge persisting for twenty-four to thirty-six hours, or if the tenderness over the antrum and tip come on about the fifth or sixth day, an operation must be done.

To determine whether an operation is demanded on the mastoid bone in those cases where there is no discharge nor has there been any, to an appreciable amount, from the ear, there are many conditions and symptoms that when present will aid us to decide. From among the classical mastoid symptoms, pain over the mastoid bone, dull, persistent and boring in character, together with a bulging downward of the posterior wall of the external canal, are the most valuable. In these cases there is little, if any, edema over the mastoid bone in adults. Temperature alone is not a reliable guide. There is no doubt that a high temperature, as a rule, would indicate an operation; yet the absence of an elevated temperature

would not be an indication for non-operative interference, for we often see cases of considerable mastoid involvement in adults without much, if any, fever. In children there is always considerable fever.

In deciding whether an operation must be performed, a blood count should be made. This is a help at times; then again, it is of no value. The increase of the percentage above normal of the polymorpho-nuclear cells might aid us to determine the presence of pus in the mastoid; but the patient might have a suppurative lesion in some other part of the body. I think it wise to have the count made, but an absence of the increase of the polymorpho-nuclear cells should not be relied upon as an indication for non-operative interference. A high general leucocyte count indicates a high degree of inflammation, with good body resistance—a count of twenty-five to thirty thousand. If the polymorpho-nuclear count runs up to a high per cent.—75, 80, or 90 per cent.—it would indicate the presence of sepsis and pus. If there is a high leucocyte count and a high percent. of polymorpho-nuclear cells, it would indicate considerable sepsis and pus, with good body resistance. If there is a high per cent. of polymorpho-nuclear cells and a low leucocyte count, it would indicate a good deal of sepsis and pus with low resistance. If there is found a low polymorpho-nuclear count together with a low leucocyte count, it would indicate a fairly good condition of the patient, or an improvement. The blood count is therefore a help, and should always be made, as it may help us out in those cases in which we have to use all the methods of precision at our command.

In all of these cases, either acute or chronic, an examination of the pus, microscopically, should be made, to determine which germ or germs are responsible for the trouble. If it is found that the infection is due to the streptococci or pneumococci, we should operate sooner than if it was found to be due to the staphylococci or other germs. Statistics bear out the fact that the streptococci and the pneumococci are the most virulent germs found in suppurative otitis media, and cause the most complications. Notwithstanding the fact that the suppurating ear was caused from an attack of epidemic influenza, the germ of that disease is

found less often in the discharge than those I have just mentioned.

In watching a mastoiditis to determine whether an operation must be performed, it is not advisable to give narcotics or antipyretics, for they are liable to mask the symptoms which are to be our guide. One night's rest might be allowed by giving an opiate, but no more should be given until a decision is reached.

When a conclusion has been reached that an operation is necessary, then it must be decided which one must be preferred, for the operation for a mastoid abscess from an acute suppurative otitis differs from that for an acute exacerbation of a chronic suppurative otitis. In the former, the antrum is opened first, cleaned out, then the cells and tip must be obliterated, the wound packed tightly and allowed to heal by granulation. In the acute manifestation of a chronic case, the antrum is also the first cavity that must be opened, then the upper third of the posterior external wall is removed, then the outer wall of the attic, the malleus and incus removed and the antrum, attic and middle ear thrown into one cavity, all necrosed bone removed and cavities curetted out thoroughly and smoothly, the cartilaginous canal slit up, turned backwards and sutured into the wound cavity, the wound closed and drained through the external ear. I have not gone into the details of these operations because they are familiar to otologists, and would likely be tiresome to the rest of the Society.

In conclusion I would advise that in treating epidemic influenza the ears be watched, the nasal cavities and naso-pharynx kept in as aseptic a condition as possible, by the use of an un-irritating antiseptic spray. Caution the patient to wait a few moments before blowing the nose, and when he does so, keep both nostrils open. At the first indication of pain, drop a few warm drops of a 10 per cent. carbolyzed glycerine into the ear, wrap it up in cotton and place a hot water bottle to it. A Japanese hand-stove is an excellent device for applying heat, the degree of which can be regulated by wrapping it in a towel; one charge of fuel will supply a continuous heat for an hour. Being flat, they can be applied to any surface, and, being light in weight, they do not oppress the patient as do hot water bottles. If pain con-

tinues, the pressure must be relieved by a paracentesis, after which the treatment I have outlined should be adopted.

1343 L. Street.

UNUSUAL CASE OF OVARIAN CYST*

By H. STUART MACLEAN, M. D., Richmond, Va.

Professor of Pathology, University College of Medicine; Visiting Surgeon, Virginia Hospital, Chief Surgeon Virginia Passenger and Power Company, Richmond and Chesapeake Bay Railway Company, etc.

While it is a recognized fact that ovarian tumors occur at all ages, yet the number occurring in childhood are so few as to make it of interest to report such cases. I do not want to make this case an excuse for reading to you what the textbooks say regarding the nature, etc., of ovarian tumors in children, but it is of interest to recall that a considerable number of such cases are dermoids in character. Several years ago Bland Sutton reported having collected sixty cases of ovarian tumors in children under fifteen years of age; twenty-three were dermoids; sixteen ovarian cysts and sixteen were sarcoma.

Cases of cystic degeneration of the ovary are not infrequently seen in early life, but the cysts are usually the size of a small pea, and do not call for operative interventions.

The following case came under my care recently:

Bessie B. was referred to me on Dec. 1, 1907, on account of an abdominal enlargement and gave the following history. Three years ago (at ten years of age) while playing she fell, and was kicked in the abdomen by a playmate. Shortly thereafter, a lump was noticed in the left side, which at the time was the size of a small apple, and from that time gradually increased. One year ago (twelve years of age) she began to menstruate, and since then has menstruated regularly, freely and painlessly. I found a well developed girl in excellent health, and upon abdominal examination, a tumor was found which completely filled the lower abdomen, and extended upward and backward, and to the left above the umbilicus. It was evidently **cystic**, and probably had sprung from the left ovary. On account of its great size, it could **not be moved** freely, but because of the absence of any symptoms, I felt

*Read before the Tri-State Medical Society, at Charlotte, N. C., February 19, 1908.

sure there had been little or no inflammatory attachments formed.

On Dec. 23, 1907, I operated upon her, making a four inch medium incision, evacuating the cystic fluid from two of the cysts and readily removed the tumor, which I found involved the right ovary instead of the left.

Patient made an uneventful recovery, and left the hospital within a month.

The tumor consisted of one large cyst compartment and three smaller ones, and at the pedicle, which was about the size and shape of two fingers was a mass of tissue, representing the remains of the right ovary. The tumor measured in circumference eighteen inches (when redistended with fluid) transversely, by twenty-three inches perpendicularly, and the contents was of a light straw color. The tube was normal, except that it was adherent to the base of the tumor. The left ovary was normal.

CONCERNING THE COMPLICATIONS AND SEQUELAE OF INFLUENZA.

By TRUMAN A. PARKER, M. D., Richmond, Va.

That "familiarity breeds contempt" is as sad as it is true; for it is characteristic of human nature that contempt of danger increases progressively with each escape. Thus, we have mine disasters and railroad wrecks and vain-glorious individuals who proudly boast of having "fought through" a case of grip without losing a day from the office. This metaphor seems as radical as it is mixed; yet a consideration of the wide range of complications and sequelae of influenza warrants a moment's serious consideration.

Bearing in mind that the osseous alone, of all the body tissues, seems exempt from the destructive effects of this bacillus or its toxins, we should govern ourselves with respectful caution in dealing even with the simpler manifestations of its infection, and congratulate ourselves and our patients when they finish the fight without serious bodily impairment.

Pure cultures of this germ have determined it as the sole cause of chronic valvulitis, cholecystitis and cholelithiasis, otitis media, meningitis and encephalitis. Almost any disease of the nervous system may follow its general infection. None of us but can recall various

functional nervous disorders varying in degree and severity, and many know of nervous anatomical lesions resulting as sequelae.

Mr. H. C., at 32 years of age, one of the finest physical specimens I ever saw, was within a week, a paralytic from the waist down by reason of an anterior poliomyelitis following grip. It is even worth mentioning that he would "sweat out his spell," and ignoring his physician's orders, left his bed and took a walk of over 20 miles. Heretofore, this same walk had frequently been taken as a diversion.

Bronchopneumonia, lobar pneumonia, bronchiectasis and pleurisy of all forms are well known complications; chronic bronchial and pulmonary influenzal infection is less frequently met with, though it does occur and not rarely results fatally after the lapse of a few years. I mean, of course, cases where autopsy shows this bacillus only and not the more frequent tubercle bacillus as a terminal complication.

The more acute cardiac involvements, especially endocarditis, are well known. Probably not enough stress is laid on myocardial degeneration by the textbooks, however. This condition is evidenced by bradycardia and tachycardia, the pulse in many of Presslich's series of observations going to 39 and 40 for several days, and in others running up to 140 from so little exertion as sitting up in bed. This complication is naturally observed during convalescence.

Gastrointestinal complications need but passing mention, as they speak for themselves and are familiar to all. Peritonitis, appendicitis, and ulceration of the bowel have been reported as due to Pfeiffer's bacillus.

With a mortality estimated according to the epidemic but always small, the previous remarks may seem to exaggerate a minimal danger. But the fatalities attributed to influenza deal chiefly with the uncomplicated acute cases and practically ignore the tendency of this infection to whip into lethal activity other processes obscure and latent.

This is particularly true of pulmonary tuberculosis and, to a lesser degree, of renal inflammations. Many an unsuspected nephritis has remained quiescent until the grip bacillus or its toxins proved too severe a strain

*Read before the Richmond Academy of Medicine and Surgery, February 25, 1908.

for the impaired kidneys and caused a rapid decline.

On the other hand, the phthisical individual has scarcely a greater foe. Advanced cases rapidly grow worse; and a great number of all tubercular patients can trace their first symptoms to an attack of grip that "hung on." In this connection, it is interesting to note that the Munich garrison discharged 67 men on account of tuberculosis, during the twelve months preceding September 30, 1889; and 132, or twice as many, during the succeeding six months. The Paris records show 349 deaths from tuberculosis between December 22, 1888, and January 4, 1889; while during the same period for the following year 886 deaths occurred from the same cause, but an epidemic of grip had swept the city just previously.

It is, then, in its complications and sequelae, that influenza commands our respect. And the knowledge of these eventualities we should impart to the laity in general, endeavoring to impress upon them the fact that they are dealing with something far worse than a bad cold, no matter how mild the attack may be. But we should **ourselves endeavor** to accurately distinguish true **influenzal infection** from that of the **micrococcus catarrhalis** and other similar conditions in order to impress the difference on the laity.

The advisability of determining the presence of the germ in large numbers—for it is not infrequently present in small numbers in otherwise healthy individuals as a diagnostic point is beyond question; and whether we should ask the City to include this among its free examinations is worth consideration. Certain it is, the laity are not yet ready for isolation and quarantine of individual cases, except under peculiar conditions.

Broadbent's advocacy of two grains of quinine every morning during an epidemic, as a prophylactic, is worth heeding; and the protection, as far as possible, of the phthisical and feeble should certainly receive our attention.

Finally, an interview with the idea of searching out any complications or sequelae which may have developed since active treatment has ceased, should be insisted upon at suitable intervals after convalescence has been

CONSERVATIVE TREATMENT OF TOOTH-ACHE.

By JAMES O. HART, M. D., D. D. S., Ashland, Va.

Possibly one of the most important of the minor ills which so often confronts the general practitioner with reference to its far-reaching consequences is toothache. In localities where no dentist is immediately available (and there are many of this kind), the doctor is called upon to attend these cases, and in each and every case he uses the same almighty specific, the cold steel.

How well I remember our dear old family physician with his "Molly catcher," as he used to call his turnkey, and the good teeth he twisted out indiscriminately, on the patient's diagnosis—minus antiseptics, minus anesthetics, and minus everything else except that sympathy which overflowed from his generous heart. That turnkey now lies idle in my cabinet, and that heart has ceased to beat. We treasure the one as a relic of the past, while the memory of the other should make us better men in our chosen professions.

That a tooth aches is no reason "per se" for its extraction. It may ache from a great many causes, but so far as a general practitioner is concerned, these can be brought down to four or five. Caries is the most fertile, and one from which the others ordinarily arise, such as pulpitis, pericementitis, abscess, neuralgia, etc.

As the treatment and diagnosis of abscess is one which tries the skill and patience of the most experienced dentists, it is only mentioned here. Neuralgia is sufficiently well known to the practitioner to need no comment; while pericementitis is rarely brought to his notice.

It is the "hollow tooth" he is called on to treat, and with it we will chiefly deal. The diagnosis is easy, and his treatment should, in a majority of the cases, be palliative.

We would suggest that the following instruments be procured as they will be essential in the outlined treatment. No. 3 mouth mirror, pair dressing pliers, Black's excavators Nos. 63 and 64, straight chisel No. 3, water syringe. These can be obtained at the dealers for two or three dollars, and will more than pay for themselves in a short time, besides giving patients a great deal of satisfaction, and saving to them organs which go so far to preserve good health.

Having located the cavity, the overhanging enamel should be cut away with the chisel, until the bottom can be clearly seen. Then take excavators and remove the decay as near to the pulp as the patient will permit, being careful not to expose it. Wash out with syringe (using warm water) from time to time as the excavating proceeds, as it gives a soothing effect and renders the operation less painful. When fluids obstruct the view, dry the cavity with a pledget of cotton in pliers. The cavity having been cleaned as far as practicable and dried, it is ready for medicament.

There are various drugs and combinations which may suggest themselves, and the physician can often, by his intimate knowledge of materia medica, relieve the patient in a few minutes.

The following is suggested, however, as being effective, and will relieve the pain in a great majority of the cases:

R Chloroform,
Oil of Cloves,
Creosote, ää 3 ss.,
Morphine sulph. gr. j.

M. S. Apply a portion on a pledget of cotton, sealing in with wax

It is not always necessary to seal in, but it is best, and may be done just as well with cotton dipped in sandarac varnish.

The gums around the tooth should be painted with equal parts of tincture of aconite and tincture of iodine to reduce periosteal inflammation which is often present.

The patient should now be referred to the dentist as soon as possible for further treatment.

Book Notices.

Diseases of the Heart. By PROFESSOR TH. v. JURGENSEN, of Tübingen; L. v. SCHROTTER, of Vienna; L. KREHL, of Griefswald. Edited with additions by GEORGE DOCK, M. D., Professor of Theory and Practice of Medicine and Clinical Medicine, University of Michigan. Authorized translation from the German, under editorial supervision of ALFRED STENGEL, M. D., Professor of Clinical Medicine, University of Pennsylvania. Philadelphia and London. W. B. Saunders Co. 1908. Large 8vo. 848 pages. Cloth, \$5 net; half Morocco, \$6 net.

This is a fully revised edition of one of the volumes comprising "Nothnagel's Practice."

Every essential detail as to history of the diseases considered, their causation, diagnosis, effects and treatment—according to the most advanced views of to-day—are fully brought out. Numerous illustrations are introduced to further explain the text. Heart complications of various diseases are so common, and their effects upon health so serious, and their fatal results so frequent that every physician should familiarize himself with the subject in order that he may be instrumental in averting such as are preventable by early recognition, or that may be relieved in great part by appropriate treatment. This volume gives practically all the information accessible at the present date as to each and all of these matters. It should be systematically read by doctors, and then kept in place where it may be easily found for after reference purposes, while having on hand a patient with conditions that often lead to heart complications or that has a disease of the heart.

MESSRS. W. B. SAUNDERS COMPANY.

Medical publishers of Philadelphia and London announce for publication before June 30th the following books: Bandler's Medical Gynecology—Treating exclusively of the medical side of this subject; Bonney's Tuberculosis; Vol. II., Kelly and Noble's Gynecology and Abdominal Surgery; Gant's Constipation and Intestinal Obstruction; Schamberg's Diseases of the Skin and the Sruptive Fevers; John C. DaCosta, Jr.'s Physical Diagnosis; Todd's Clinical Diagnosis; Cama's Epoch-Making Contributions in Medicine and Surgery. All these works will be profusely illustrated with original pictures.

Editorial.

Medical Graduates From the Richmond Colleges.

The Faculties of the University College of Medicine, Richmond, and the Medical College of Virginia have announced the following as entitled to receive the Degree of Doctor of

Medicine during the Commencement exercises this week.

University College of Medicine:

L. Mc.L Beatson, Wilmington, Del.
S. R. Benedict, Athens, Ga.
L. R. Blair, Churchville, Va.
L. S. Booker, Waynesboro, Va.
H. C. Bradford, Norfolk, Va.
W. E. Bundy, Belfast Mills, Va.
W. D. Carr, Richmond, Va.
M. P. Deboe, Body Camp, Va.
E. C. Eggleston, Richmond, Va.
B. D. Epfing, Camp Creek, West Va.
A. G. Fidanza, Wilmington, Del.
T. F. Gill, Garrisonville, Va.
F. S. Givens, Newport, Va.
O. E. Hedrick, Museville, Va.
A. H. Hoge, Hoge's Store, Va.
J. F. Hubbard, Williamsburg, Va.
E. W. Lassiter, Rich Square, Va.
J. Leake, Ashland, Va.
T. W. M. Long, Garysburg, N. C.
F. K. Lord, Richardson, New Brunswick,

Canada.

J. H. McCulloch, Henderson, W. Va.
P. W. Miles, Mathews, Va.
R. L. Osborn, Clarksburg, W. Va.
A. M. Owen, Sycamore, Va.
R. Parker, Como, N. C.
E. B. Pendleton, Cuckoo, Va.
B. L. Phillips, Beaver Dam, Va.
D. L. Rawls, Holland, Va.
T. H. Royster, Virgilina, Va.
A. M. Saunders, Newport News, Va.
J. R. Shacklette, Staffords Store, Va.
W. W. Stafford, Elizabeth City, N. C.
J. R. Sterrett, Hot Springs, Va.
W. J. Summers, Patterson, N. J.
T. C. Sutherland, Finney, Va.
A. C. Swimley, Winchester, Va.
J. A. Thomas, Valdosta, Ga.
J. H. Thompson, Watsonville, Calif.
A. P. Upshur, Richmond, Va.
E. P. J. Whelan, Jersey City, N. J.
H. F. White Staunton, Va.
H. Fletcher White, Norfolk, Va.

Medical College of Virginia:—

F. E. Bell, Wilmington, Va.
H. A. Brady, Wytheville, Va.
M. S. Brent, Heathsville, N. C.
B. O. Choate, Sparta, N. C.
D. A. Christian, Jr., Vera, Va.

W. H. Cobbs, Martinsville, Va.
W. L. Cowles, Williamsburg, Va.
T. F. Dodd, Alexandria, Va.
S. C. Draper, Spring Valley, Va.
S. B. Ellis, Waverly, Va.
G. A. Ezekiel, Richmond, Va.
C. Garrenton, Coinjock, N. C.
J. P. Hankins, Sandy River, Va.
R. C. Hogue, Disputanta, Va.
F. M. Horsley, Lovingson, Va.
H. F. Hoskins, Saluda, Va.
J. E. Knight, Fredericksburg, Va.
B. H. Martin, Hallsboro, Va.
S. E. Massey, Fort Mills, S. C.
J. O. McClelland, Wrights, W. Va.
J. W. McDowell, Jr., Broadway, Va.
J. H. Moorman, Haleford, Va.
E. H. Morrison, Danville, Va.
G. M. Naff, Morristown, Tenn.
E. B. Nuckols, Nuckols, Va.
E. C. Register, Georgetown, S. C.
B. M. Rosebro, Fredericksburg, Va.
F. G. Scott, Jr., Madison Run, Va.
G. W. Skaggs, Ballard, W. Va.
A. T. Smith, Richmond, Va.
H. T. Smith, Anna, N. C.
J. W. Surratt, Sylvatus, Va.
E. M. Tanner, Richmond, Va.
T. B. Twyman, Locust Dale, Va.
J. A. Tyree, Danville, Va.
L. D. Walker, Cedar Key, Fla.
W. R. Wallace, Blackstock, S. C.
C. R. Woolwine, Nace, Va.

From the University of Medicine, there were, in addition, 12 graduates as Doctors of Dental Surgery; 6 graduates in Pharmacy, and 6 graduates as Bachelors of Pharmacy.

From the Medical College of Virginia there were 8 graduates in Pharmacy.

Consultations of Doctors.

There was a time in our earlier life when consultations were honorable and helpful, and were distinctly sought. But the time has come, it would appear, when they have become distrustful as to fair dealings between doctors, and of doubtful utility to the patient. Of course there are yet many exceptions to this statement, and our purpose, if possible, is to increase these exceptions until they may become common, as in the older times.

The former Code of Ethics well defined the proper relationship of consultants to the attending physician and to the patient. It was customary for the consultant to keep himself in the background, so far as the expression of opinions to the patients or his friends were concerned; but in a separate room, after getting all the facts possible, from patient and friends at the bedside, necessary for diagnosis or therapeutic suggestion, review the case with the attending physician alone, and to him alone call attention to such facts as may seem to have been overlooked, and in proper candor make such treatment suggestions as might appear requisite. Oftentimes there was found to be perfect agreement between the attendant and the consultant. The consultant did not give any expression—by word or manner—of disagreement of opinion to any outsider. Then, confidence was retained in the attending physician, and he remained the family doctor for years.

But how changed! Now, when the consultant is called in, he assumes in the presence of patient and friends an air of superiority, and in the consultation room is rather dictatorial than advisory. In the sick room, with an air as if he had discovered something overlooked by the attendant, he remarks upon the quality of the pulse or respiration, or the appearance of the tongue or some condition noticeable by percussion or auscultation which had already been noticed. In short, he tries to impress the patient and the friends around that *he* has found it all out, and that *he* will recommend a line of treatment which will cure in a short time. In the consulting room, in a voice to be heard all over the house, he recommends a "favorite prescription" which scarcely in any essential differs from that already being used. On the street, he speaks with confidence as to the recovery of the patient, *if his prescriptions are properly followed*. If he recovers, he was called just in time to save life. If the patient, however dies, or goes into a lingering illness, it was simply because the attendant did not carry out every detail of his recommendations in consultation.

It is plain that the pomposity and the "know-all" appearance of such consultant, if the patient be one of good financial means or influential among the people, is to impress *himself* upon their wondering attention rather than the

good he may do the patient or the help he may give the attending physician. What cares he for the feelings of the attendant, or the imputation of incompetency he places upon him, so he gains the patronage of the wealthy and influential?

More marked, perhaps, is this manifestation of over-bearing in cities where there are medical colleges, and where some are "Professors" or "ex-Professors," in their dealings with their graduates—even of years ago. Yet we notice that in certain sections many of the doctors called in consultation still keep in mind the Golden Rule. This appears to be more specially true of country doctors.

There can scarcely be any doubt as to the greater infrequency of consultations sought by attending physicians than formerly—due to the apprehension that the consultant will, by hook or crook, secure the future patronage of his patient and friends. This can all be remedied by the proper observance of the advice given in the old "Code of Ethics" of the profession.

These remarks do not apply to "referred practice," where a specialist's aid is sought. It would indeed be very impolitic for specialists to adopt any other habit than that of speaking kindly of the attending physician to both patient and his friends; for they might otherwise rob themselves of future referred patronage from the general practitioner.

The National Association of Charities and Correction

Held its annual session at the Jefferson Hotel in this city last week, and was largely attended—nearly every state of the Union being represented. The objects of the Association are well stated in its title. The papers and discussions were very generally instructive and the result will be good in calling attention to many errors in systems in various localities. Such meetings tend to mold public opinion and demands. With reference to the charity features, communities are advised to look into the claims of those who apply for gifts, so as to provide for the worthy, and to ferret out those who are simply lazy and indolent, and impostors. Bureaus of information should be established so as to provide positions for those who are able to work. Un-

less a false sentimentality should too strongly pervade the sessions of this Association, it is calculated to do great good. The meetings were practically every day last week, and the visitors were, for the most part, representative citizens of their various localities and states.

The American Proctologic Society

Will hold its Tenth Annual Meeting in Chicago, Ill., June 1 and 2, 1908. Headquarters and place of meeting will be the Palmer House, and the profession is invited to attend each session. Listed on the preliminary program now in hand are twenty papers, practically each of which is by an author of wide reputation as a specialist on diseases of the rectum and allied conditions.

The small body of men composing this Society are doing a big work in advancing this special branch of medicine, and we are confident that any practitioner who attends will find much to interest and instruct him. Dr. A. Bennett Cooke, of Nashville, Tenn., is President, while Dr. Lewis H. Adler, Jr., of Philadelphia, is Secretary-Treasurer.

The Mississippi Valley Medical Association

Will hold its thirty-fourth annual meeting in Louisville, Ky., October 13-15, 1908, under the Presidency of Dr. Arthur L. Eliot, of Chicago. The Address in Medicine will be delivered by Dr. George Dock, Professor of Medicine in the University of Michigan, Ann Arbor; and the Address in Surgery by Dr. Arthur Dean Bevan, Professor of Surgery in Rush Medical College, Chicago.

The Committee of Arrangements in Louisville has selected the Seelbach Hotel as headquarters. Several entertainments will be features of the occasion. Dr. Henry E. Tuley, of Louisville, is Secretary of the Association.

Dr R. M. Slaughter. Theological Seminary, Va.

Treasurer of the Medical Society of Virginia, will avail himself of an opportunity to secure two months needed rest by a sea trip to Brazil. He expects to sail about May 25th. During this vacation, the Recording Secretary of the Society will attend to such duties of Dr. Slaughter's office as he can. We hope for Dr. Slaughter a pleasant trip, and that he will return in a thoroughly restored state of health.

The National Volunteer Emergency Service

Instituted in 1900, has recently been re-er-

ganized by the election of Dr. James Evelyn Pilcher, editor of *The Military Surgeon*, as Director General, and Dr. F. Elbert Davis of New York, as Adjutant General. The work of the Emergency Service will be conducted in three separate Corps, a First Aid Corps, a Public Health Corps, and a Medical Corps, the latter consisting of physicians, rank varying according to length of service.

Full details regarding the Service and its great work may be obtained by addressing Director General Pilcher at Carlisle, Penn.

Alumni of Tulane Medical Department—Take Notice.

All graduates of Tulane intending to be present at the meeting of the A. M. A., in Chicago, June 2d to 5th, should write at once to Dr. Hugh B. Williams, 100 State street, for information concerning the gathering of the Alumni on June 2d. Tulane headquarters will be at the Auditorium Hotel, and the Alumni are urged to call upon their arrival for information. This is important.

New Virginia State Board of Health Appointments.

Dr. Eunion G. Williams, State Health Commissioner, to go into office July 1, 1908, has appointed Dr. Allen W. Freeman, of Richmond, to be his Assistant. He is now Assistant to Dr. E. C. Levy, who is Chief Health Officer of Richmond city. Dr. Williams also appoints Dr. Meade Ferguson, of Blackstone, Va., as State Bacteriologist.

The American Medical Association

Will offer many inducements for a large attendance at Chicago, June 2-5. The Windy City being centrally located, there can be no doubt but that this first meeting in the adopted home city of the Association, since becoming the giant that it is, will be in many respects a notable one.

The Southwest Virginia Medical Society.

Meets at Pulaski, Va., June 4-5. "Milk" has been selected as the subject for public symposium, and "Therapeutics" for general discussion. Dr. Peyton Green, of Wytheville, is secretary.

The Southside Virginia Medical Association

Will hold its next meeting at Emporia, Va., June 2.

THE Virginia Medical Semi-Monthly.

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Original Communications.

TREATMENT OF ANTE-PARTUM ECLAMPSIA.*

By JOHN F. WINN, M. D., Richmond, Va.

Professor of Clinical Obstetrics in the University College of Medicine, Obstetrician to the Virginia Hospital, Etc.

Of all the pathological conditions of the gestation period, none is commanding greater interest than pregnancy-toxemia, and I am equally certain that nothing is more to be dreaded than an eclamptic seizure occurring several weeks before the expected confinement in a primi-gravida who has had no prophylactic care. For this reason the condition is doubly appalling, and the prognosis proportionately uncertain. The maternal mortality in ante-partum eclampsia having been shown to be fifty per cent., and the fetal mortality sixty-nine per cent., as against twenty-five per cent. for mother and fetus in the intrapartum variety, no argument is needed to show the necessity for recognizing early the pre-eclamptic state, whose classical symptoms represent only too truly an over-charged circulation with one or more unknown toxins.

At the risk of over-lapping in some degree the subject of prophylaxis assigned to the first paper in this symposium, I feel that because the eclamptic tendency is proportionate with the advance of pregnancy, I will be excused for further emphasizing the supreme importance of *early, unremitting and systematic* medical supervision of the pregnant woman in accordance with the individual symptoms, and particularly the local uterine conditions presented.

Regarding the management of the pre-eclamptic state; if, despite the general hygienic and medicinal treatment represented by an ex-

clusive milk diet and the systematic stimulation of *all* the eliminative processes, the danger signals are progressively increasing, I am in accord with those who believe that premature labor should be promptly induced, *but only by that method or combination of methods best suited to the case in hand*, some being better adapted to slow; others to more rapid methods of emptying the uterus. And I am reminded to say just here, that the apparent divergence of opinion regarding the choice of methods for the induction of labor is more than likely to be accounted for by the failure to fit the method to the individual conditions of softening or dilatability of the cervical tissues.

I believe further, it is very important to keep in mind the fact that, in the presence of convulsions, no routine treatment can be followed; but each must be managed in accordance with the conditions that confront us. In recent years, I have followed the combined treatment—that combination of procedures which *seeks to control the convulsions, eliminate the toxins, and hasten the delivery, while the patient is under complete anesthesia, by some rapid method which promises the least injury to the mother.*

It is well to bear in mind that these indications must be fulfilled as nearly as possible at the same time, and, therefore it is very necessary to have several cool-headed assistants, selected from others than the family to do important and varied work under the direction of the man-in-charge, who must, of course, never for a moment lose his head.

To control the convulsions:—Chloroform, veratrum and chloral, are the most reliable. The chloroform must be given just as the seizure is coming on, and discontinued in the intervals between the convulsions. It is useless to administer it while the respiratory muscles are fixed, and it is a mistake to continue the giving of the anesthetic after the convulsion is

*Read by invitation as a part of a Symposium before the Southside Medical Association, at Petersburg, Va., March 3, 1908.

off unless efforts are being made to dilate the cervix: the unnecessary use of chloroform only increases the cardiac depression already induced by the toxemia. Undoubtedly many cases have died because of the too lavish use of chloroform. I feel that I am correct in saying that few of us rely on chloroform alone, but every one will agree that it is our most valuable adjunct to other treatment.

My second choice of anti-eclampsics is the Southern remedy, veratrum, especially if the pulse is full and rapid. When given guardedly, 10 to 20 minims of the fluid extract hypodermically for the first dose, followed by 5 or 10 minims every half hour, until the pulse is reduced to 65 or 60 the convulsions will generally be held in check. Up to the present time, I have not seen any untoward effect from veratrum, but should its depressing action go too far, whiskey is a certain antidote. Not only does veratrum control the convulsion but it acts upon the skin and kidneys, and, in addition, it is claimed to relax the cervical sphincter—a most important consideration when hastening delivery.

My usual custom is to administer chloroform for the convulsive attack itself, and when it has subsided start with the veratrum as stated above, unless especially contra-indicated. If the case is a very severe one I administer 40 to 60 grains of chloral by rectum, or, if patient can swallow, 30 grains by mouth. To be effective it is generally conceded that chloral must be given in large doses. Not only has the chloral treatment the endorsement of the American, but of the French and German obstetricians as well; and when it is remembered that Winckel saved 85 out of 92 cases with large doses of chloral, this remedy must always hold a high place in the treatment of the convulsive stage. About the morphia treatment, I am skeptical, notwithstanding the announcement from Veit that he had treated 60 cases with morphia with only two deaths, the lowest death rate, by the way, from any plan of treatment ever proposed; but up to the present time the idea impresses itself upon me that morphia must antagonize the eliminative part of the treatment, and for this reason, I have never used it.

Elimination: Of the eliminative measures copious irrigation of the colon with normal

saline solution, given through a rectal tube not less than thirty inches long, heads the list. This must be thoroughly and systematically carried out. The patient should either lie on the left side or in the dorsal posture with hips well elevated. From four to five gallons should be used, possibly more, taking care that the outflow is not obstructed. A quart of the saline should be left in the colon. This should be repeated every six hours. Of course, the time-honored hydrogonic cathartics should be given. Large doses of calomel, 10 to 15 grains, followed by sulphate of magnesia are most important in nearly all cases, particularly if there be hepatic torpor. In those cases presenting post-eclamptic stupor, large quantities of saturated solution of sulphate of magnesia placed high in the colon by the long tube give most excellent results. It is important that the tube should be placed as high as possible, and that the saturated solution shall be given with a free hand.

To encourage the action of the skin, I prefer the hot-air bath to the hot-pack. The objection to the latter is the difficulty of determining whether the moisture on the skin is perspiration or the steam from the wet blanket. The hot air bath can be secured in a few minutes by using an angular section of a stove-pipe, the short arm of which being placed over a lamp, the heat is conducted under the bed-clothing, the latter being well pinned down to the bed. Care must be exercised, however, in using the hot-air bath because its prolonged use is depressing. It is well to keep ice to the head while the patient is in the hot air.

The subcutaneous injection of normal salt solution greatly aids free elimination by the skin as well as by the kidneys and should always be given: a good site for it is under one or both breasts. It is hardly necessary to say that this must be aseptically done and that care must be taken to see that the long hollow needle goes *under* and not into the gland, but I have seen this mistake made. If sweating does not follow hypodermoclysis this method should be used with caution. It is claimed that the salt solution predisposes to pulmonary edema.

Venesection: In the earlier part of my professional life, I resorted to bleeding more frequently than in later years. Whether this is a delinquency or not, I must confess to a

growing mistrust in venesection, for while it is true that some authorities continue to advise it, others resort to it very infrequently or not at all. If, however, there is great plethora, cyanosis, stertorous breathing and, particularly, threatened pulmonary edema, I believe bleeding is indicated. It is generally admitted that venesection may prevent pulmonary edema but it is doubtful if it ever cures it.

Pilocarpine I have never used because of its depressing effect on the heart and its great tendency to produce pulmonary edema. It should be universally condemned. Finally among therapeutic agents, oxygen is a most excellent adjuvant, both as an eliminant and a stimulant, especially in post-eclamptic stupor, and when available a tank should be provided for this emergency.

INDICATIONS FOR METHODS OF EMPTYING THE UTERUS.

During pregnancy, if, despite the most diligent eliminative treatment, the urinary findings and the subjective symptoms show that the toxemia is progressively increasing there remains but one thing to do—empty the uterus. If labor has not already set in, and there is no special reason for haste, a slow method is unquestionably the one to be selected; one least likely to increase reflex excitability and thereby precipitate a convulsion. The method which has served me best under these circumstances is the bougie or a No. 20 F. soft rubber catheter. While this is a safe method it must be admitted that it is uncertain, for while uterine contraction may set up in a few hours, it often happens that a second or even a third catheter has to be introduced. I have had occasion to employ it a number of times, however; and, when reinforced by a cervical gauze tampon packed closely into the cervical canal and also well around the cervix, it has rarely failed of results.

When, however, the toxemia has progressed in the ante-partum condition to the point of convulsions and labor pains however slight are being excited by the attack, the gravity of the situation then demands that premature delivery *shall be hastened by a rapid, and at the same time, a safe method, while the patient is under anesthesia.* It is extremely fortuitous if the pains are increasing for this is evidence that Nature requires that the pregnancy shall be interrupted and that she is doing her best to ac-

complish that end. As a rule, the pains increase in force in proportion to the severity and frequency of the convulsions, thereby producing a softening of the cervix that will admit of a partial dilatation of the greatest obstacle to delivery, viz: the internal os. This is the time when veratrum is so valuable for the reason mentioned above, viz: its property to soften and relax the cervical rings. If, under these conditions, it is possible to introduce the smallest Voorhees' rubber bag, it should now be done, and by means of it complete the dilatation of the cervical canal and external os to a size that will admit the index finger of each hand, and successively the remaining fingers of both hands until dilatation has been accomplished. If it should be found that Nature has already dilated the cervical canal and that the external os alone remains to be opened, the situation is the more fortunate, because the bi-manual dilatation can be started at once without the preliminary use of the Voorhees' hydrostatic bag. Assuming that dilatation has now been accomplished by the bi-manual method and that the time has arrived for the extraction of the child, the choice of method of extraction depends upon the following conditions: if the head is low down in the pelvis, apply the forceps; if the head is high and particularly if movable above the superior strait, delivery should be completed by version.

There are times, however, when even a more complicated condition exists than the one just mentioned, and when it may be very difficult to decide what is the best course to pursue. I refer to those cases (and worse still if they are primiparæ) which are seized with *convulsions several weeks before the expected confinement, and which present a closed cervical canal with a cervix but little if at all shortened, and which show no signs of uterine contraction.* Here the need for rapid emptying of the uterus would seem to be supreme, and, yet, any attempt at forcible dilatation, whether by parallel steel dilators, or by any type of the Bossi instrument, of a cervix whose supravaginal portion has not yet dilated, would undoubtedly expose the patient to the certain danger of extensive uterine rupture, serious hemorrhage, and possibly death.

The obstetric treatment under these circumstances depends in large degree upon the

patient's environment. If in a hospital, the trend of modern opinion leans to the deep cervical incisions carried up to the vaginal vault, first proposed by Duhrssen, or, what is believed to be better, his elaborated operation, the vaginal Cæsarean section. If in the patient's home, however, these operations, and especially the latter, should not be attempted, particularly in the absence of competent assistants and the necessary accessories. Stated broadly, the treatment best adapted in the home of the patient for convulsions unattended by labor pains, and in presence of a closed cervical canal several weeks before term, is the Voorhees' hydrostatic bag in graduated sizes, if the cervix can be dilated enough to permit of its introduction. Otherwise, one is forced to rely entirely on therapeutic measures, a cool head and discriminating judgment for the management of the case. Much has been written in advocacy of the Bossi dilator, which is believed by a few obstetricians to be especially adapted for just this class of cases, but the more conservative of this country are so much opposed to rapid delivery in a closed cervix that Bossi's dilator and all other methods of forcible delivery are very properly ruled out. The same statement can be applied to the classical Cæsarean section proposed as far back as 1889 for this variety of eclampsia. All that need be said about this operation is that it has not been favorably received nor is it likely to be as long as it is followed by the high mortality rate of 36.25 per cent.

FUNDMENTAL PRINCIPLES OF DILATATION.

Reverting to the second classification, viz: convulsions accompanied by a partial dilatation of the cervix—it is for these that bi-manual dilatation finds its widest range of application, and I would lay special stress upon the fundamental principles upon which its success so largely depends:

1. Under no circumstances should extraction be attempted until the internal os has been completely dilated; and, when full dilatation has been secured, continue efforts at dilatation a few moments longer to produce complete relaxation of the cervical ring before extracting the fetus. The failure to observe this injunction incurs the most imminent risk of rupture of the lower uterine segment, as well as the death of the child.

2. It is equally important that dilatation shall be gradually and slowly performed. Any attempt to score a record for a complete dilatation in a specified time as in "one hour" or less time, without a preliminary softening or relaxation of the cervix must be condemned.

3. Suspend all work at dilatation when the cervix contracts around your finger, resuming efforts when the cervical ring begins to relax.

4. Imitate always Nature's method by pulling somewhat downward while at the same time pulling at right angles to the cervical axis.

5. Be sure that the fingers are carried well up within the internal os, remembering that the natural method starts with dilatation of the internal and stronger ring. For this reason any attempt at dilatation beginning with the external os and ending with the internal ring is to be avoided.

Technique of Bi-Manual Dilatation. When practicing bi-manual dilatation after the method proposed by Bonnaire and popularized by Edgar, the operator stands to the patient's left side and, with the right hand carried over the pubis, the forefinger is introduced in a manner that necessitates extreme flexion at the wrist, the operator's body bending greatly to the left side. I have found this posture extremely awkward and tiresome; and, furthermore, with the wrist in complete flexion one has little power to make the traction needed; consequently, I am in the habit of standing or sitting directly in front of the patient, making traction straight from the shoulder with one forefinger in supination and other in pronation. One has but to try both ways to find the latter much the easier of the two.

To be more explicit; With the right index finger in the position of supination, traction is made upward behind the symphysis. The tip of the left forefinger is next introduced while in pronation; the backs of the fingers being in relation with each other, traction being made in opposite directions. While continuing this pressure, change frequently the point of contact, and, necessarily, the direction of traction, antero-posteriorly, laterally, and obliquely, taking care that all parts of the ring shall, in their turn, be acted upon. The point to bear in mind is that the pressure is continuous and is gently and evenly distributed. When dilatation is thought to be complete, continue the

pressure steadily a little while longer until the fingers impinge on the walls of the pelvis and thus produce that full relaxation and paralysis of the ring already referred to above and which is acknowledged to be so essential for successful delivery.

114 N. Fifth Street.

PUERPERAL ECLAMPSIA*

By M. L. REA, M. D., Charlottesville, Va.

In dealing with this subject I wish to take up especially the etiology and treatment, and refer to five cases with which I have been connected. I do not wish or intend to advance any new theories, but simply review the condition in order to ascertain what progress is being made, and what mode of treatment is best to adopt in handling the condition, which condition is the most horrible that the obstetrician has to deal with.

Eclampsia is an acute symptomatic condition which may occur in pregnant, parturient or puerperal women, and is characterized by clonic and tonic convulsions, during which time there is loss of consciousness, followed by more or less prolonged coma. This condition, as you all know, is a rare one, occurring once in from 250 to 500 of all labors, varying in frequency with different authors. The number of cases seen by individual obstetricians is too small to permit of an exact report as to frequency. Most of all reports are from hospital records, and every one knows that the worst class of cases always get to the hospital.

The class of women that are most frequently attacked are primiparæ, which embrace 75 per cent. of all cases of eclampsia, and proves to be most fatal in the same class of patients.

It is stated by some that twin-pregnancy is a predisposing factor, although in the five cases that I have seen not a single one proved to be twins.

The *etiology* of this condition has never been worked out satisfactorily. New theories are constantly being advanced. So many theories have been advanced as to cause one author to assert that "eclampsia is the disease of theories." The bacterial theory has neither been proven, nor discarded. Ewing, of Cornell, in studying the etiology from a pathological stand-

point, came to the conclusion that it must be due to some functional disorder of the liver from the frequency of changes found in the liver. He thinks that the changes found in the liver are so invariably present that all other changes and symptoms must be sequences rather than precursors. The theory of auto-intoxication is accepted more than any other one theory, and one author suggests that this poison is an organic acid possibly a derivative of lactic acid.

Some think that it might be due to a failure of the normal hypertrophy of the thyroid gland during pregnancy, thus giving rise to the theory of deficiency of internal secretion. No doubt all of you have noticed the hypertrophy of the thyroid during pregnancy. I know a woman who has a goitre the size of a hen's egg when not pregnant, but when pregnant it increases in size until it is fully as large as a goose egg, and causes considerable discomfort in respiration.

The theory that the condition is due to some poison, probably of fetal origin, and that this toxin circulates in the maternal blood coming in contact with the nerve centres and, through its irritation, causes convulsions has received much attention. The cause or reason for this irritation of the maternal nerve centres may be due to a defective elimination on the part of the eliminative organs.

The element that seems to play a great part in eclampsia is nitrogen, since the amount of urea elimination is markedly decreased in all cases of eclampsia.

The old belief that uremia and eclampsia were exactly similar in origin, as were the symptoms similar, has long since been discarded, as cases of eclampsia occurred which showed no involvement of kidneys; still in the five cases that I have seen there has been marked involvement of the kidneys, with a high percentage of albumen, and a great number of different kinds of casts.

The great number of theories offered as to the etiology of eclampsia goes to prove that the real cause of eclampsia is not known and the true nature of the condition not satisfactorily worked out. The majority at present adhere to the theory that the condition is a result of some toxin, probably of fetal origin, and this toxin in circulating in the maternal blood causes

*Read before the Piedmont (Va.) Medical Society, during its session at Orange, Va., April 18, 1908.

an irritation of the nerve centres, which gives rise to the convulsions.

The condition is usually preceded by premonitory symptoms of toxemia in pregnancy, such as œdema, headache and disturbances of vision. The œdema may or may not be marked, but is as a rule more or less general, and not confined to the lower extremities. The headache is variable as to time of occurrence, sometimes coming on quite a time before an attack, and again may precede a convulsion by only a few minutes. I had a case of post-partum eclampsia last summer who never had a particle of headache until one hour after delivery, and in less than two hours after delivery was seized with a convulsion. The condition does not occur until after the first half of gestation and occurs oftener just before or at the beginning of labor. The earlier the onset during pregnancy, the more grave the condition; also the gravity increases with each convulsion. The most favorable condition is the immediate cessation of convulsions after delivery.

The *prognosis* of each case depends upon the severity and rapidity of the occurrence of the convulsions in each individual case, also the resisting power of the patient.

The *treatment* is divided into prophylactic and curative. The most important one is prophylactic. In the first place, the result depends largely upon an early recognition of the condition; and then nothing should be spared, nor should any time be lost in carrying out a rigid treatment, with special attention to diet and action of kidneys and bowels. The best of attention in an early recognition of the condition may not avail much, as a convulsion may occur when you believe your patient improving. There is little doubt that a great many cases of eclampsia have occurred that might have been prevented if the physician had only spent a little more time and at frequent intervals ascertained, as far as he was able, the exact condition of the patient. The chief way of judging this condition is by a frequent examination of urine, the amount of albumen and urea being especially noted; also the amount of urine passed in 24 hours. The treatment should consist of abstinence from nitrogenous food and heavy vegetables, the giving of diuretics, and to insist that the patient drink plenty of water. If this treatment does not improve the con-

dition the patient should be put to bed and allowed a milk diet and given a hot pack once or twice daily. Still, if there is no decided decrease in amount of albumen, and increase in amount of urea, the curative treatment should be resorted to, it matters not what time of pregnancy this condition arises. No doubt many a patient has lost her life by putting off too long an interference in hope of getting a healthy and live child.

The curative treatment consists of a rapid and safe induction of labor, if labor has not begun, and then followed by an easy delivery. If the patient does not have an easy delivery she should be assisted by the obstetrician to prevent any overtiring which condition would prove detrimental should she be seized with post-partum convulsions.

In case of antepartum convulsions no time should be lost in administering chloroform and bringing about delivery as soon as possible, care being taken not to severely lacerate the cervix should steel dilators be used. Bimanual is the most practicable and safest means of dilatation. After complete dilatation has been accomplished and yet with the head not engaged, I consider podalic version to be the proper method of delivery. In case the membranes are ruptured and the head is engaged, forceps have to be used. After delivery of the child no pains should be taken to prevent the loss of a moderate amount of blood, as I consider that this loss of blood during delivery plays a large part in the happy cessation of convulsions in so many cases after delivery. If there is not a good loss of blood during delivery, I believe the best results will be obtained by venesection, followed by intravenous infusion of normal salt. In cases of post-partum convulsion, by all means lose no time in performing venesection; a pint or more of blood may be taken, the amount to be judged by a constant watch over patient's heart action. An intravenous infusion should be immediately given, the amount to equal or exceed the amount of blood taken. This procedure I consider worth more *per se* than all the medicines in the Pharmacopeia combined. In addition to this treatment of venesection and infusion, we should not forget to look after the kidneys, skin and bowels; also prevent patient from biting tongue during the convulsions. Hot packs and saline enemas should be given frequently. I

saw one patient given a continuous high rectal saline irrigation for twenty-four hours, during which time she had twelve convulsions, making fourteen in all with the two she had before delivery, and finally recovered.

One or two drops of croton oil should be given at the onset of all cases of eclampsia. I consider the well-known drugs, such as veratrum viride, nitroglycerin and morphine of no practical use, unless possibly morphine in large doses may withhold an attack for a short while.

In the five cases with which I have been associated there were two deaths, in both of which ante-partum convulsions occurred. Two post-partum and one inter-partum case recovered. The last case that I had was about eight months ago. She was a multipara (second child), age 27 years, hearty and active all during pregnancy, ankles moderately swollen at night, no headache or visual disturbance, was in labor about three hours, had a fairly easy labor; first convulsion came on two hours after delivery, had five convulsions in two and half hours, at which time she was bled and infused. About one hour afterwards another convulsion occurred, which was the last. Urine showed large amount of albumen, with decreased amount of urea. She made a rapid recovery, getting up in about four weeks, and the urine was entirely clear in two months.

THE STUDY OF THE EYE AS AN AID TO DIAGNOSIS OF SYSTEMIC DISEASES.*

By LELAND O. MAULDIN, M. D., Greenville, S. C.

All that could be said pertaining to this subject would make many volumes of medical literature, but I shall endeavor in this paper to present only a few thoughts which may be worthy of a casual consideration by the specialist in ophthalmology as well as by the physician in general practice.

The eye, under normal conditions, is a medium through which external phenomena can be perceived and transmitted to the brain, there to be transformed into psychological and physiological impulses. Hence, it is through it that we are brought closely in touch with all the visual manifestations of life, and acted upon in a varying degree, physically as well as mentally, by the influence of our environment. It is

from it, especially in abnormal conditions that we may get reflex disturbances affecting any of the vital organs. It is also susceptible of being acted upon reflexly from these organs when their physiological functions have been perverted.

Therefore, by virtue of its inter-relations with other organs of man's anatomical structure, its study becomes practically a useful procedure in the diagnosis of many systemic diseases.

For convenience of presentation, I have deemed it best to treat the subject of this article under the heads of external and internal considerations, and will proceed to consider the eye externally.

External Considerations:—To the trained observer there is no organ of the body which, by its appearance alone, tells so much of the individual's character and physical condition as does the eye. It often reflects the sad story of a dissipated career. Its uninterested appearance often speaks of a stupid intellect; while its wild glare and vacant stare may add a link to the chain of symptoms which leads us to a diagnosis of insanity. Its nervous twitching may speak vividly of on-coming convulsions. Its loss of tone, relaxed muscles and corneal ulcers may indicate the absorption of syphilitic or other toxic principles. The yellowness over its sclera presents to our mind a diseased liver or a degenerated blood. An edema of its lid suggests a leaking heart valve or an inflamed kidney. Its anemic appearance speaks of malnutrition of the body; while its hyperemia may be a result on the "morning after." The dull and lustreless film that comes over it may give the inevitable signal that the patient has breathed his last.

With these few general thoughts we come to a consideration of some of the symptoms in detail.

The Pupils:—There are several traumatic and constitutional diseases in which the pupils constitute important factors in the diagnosis. In hemorrhage of the pons varolii and in opium poisoning, the pupils are contracted to the sizes of pin-points, or approximately so.

In general paresis, the pupils are usually uneven in size. In hemorrhage and abscess of the cerebrum they are frequently uneven. This fact

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is of special diagnostic value in injuries of the head.

The Argyll-Robertson pupil, which does not react to light but does to accommodation, is an important symptom of locomotor ataxia and of general paresis of a syphilitic origin. In complete paralysis of the third nerve the pupil is dilated on the paralyzed side and does not react to light. The paralysis is usually indicative of a degeneration at the nucleus of origin of this nerve, and the degeneration is often extensive enough to involve the nucleus of origin of other cranial nerves.

Ptosis.—This is either congenital or acquired; when acquired it is a very important symptom of nerve disease. It is frequently associated with hysteria. When this is a factor in the cause the ptosis is on both sides, and is only one of the numerous symptoms that may be associated with this disease. It is an important symptom of third nerve paralysis, either wholly or in part due to pressure on this nerve somewhere in its course, or to degeneration of brain tissue in its nucleus of origin. The real cause of the ptosis is the paralysis of the levator palpebrae muscle.

In a partial form (pseudo-ptosis), ptosis is sometimes due to paralysis of the sympathetic nerve. In this form, the pupil on the affected side is not dilated as it is in paralysis of the third cranial nerve. With this form of ptosis there is frequently associated a vasomotor palsy on the affected side, characterized by an elevation of temperature and a redness and edema of the skin.

Scleritis and Iritis.—These diseases usually come as a result of a rheumatic or gouty diathesis, as a result of syphilis and as a result of gonorrhea which has been an etiological factor in the production of rheumatism. Hence, when either iritis or scleritis occurs, we are pointed to one of these systemic diseases as the underlying cause.

Exophthalmos.—This, with impairment of the consensual movement of the upper lid with the eyeball, especially if there is a tumefaction of the thyroid gland and a rapid heart's action, makes the diagnosis of exophthalmic goitre positive. Exophthalmos is most frequently the first symptom of this disease.

It is also an important symptom of malignant and benign growth in the orbital cavity, the

malignant of which are frequently metastatic in origin; hence are systemic.

This also occurs as a symptom of edema in the orbital tissues and of parylitic proptosis.

Conjunctival Defects.—The systematic condition known as a strumous diathesis is often fruitful of inflammation in the eyes, the most prevalent of which is conjunctivitis. We are often awakened to its importance by the appearance of the eye trouble which is frequently accompanied by an eczema of the face. This condition is frequently the sequel of some one of the acute infectious diseases.

The micro-organisms of diphtheria and gonorrhea have a special affinity for the conjunctiva, and in the treatment of these diseases precautionary measures with reference to the eyes cannot be too strongly emphasized to the patient.

There is an important symptom by which we are enabled to diagnose fracture at the base of the skull, especially when the fracture is of the orbital plate of the frontal bone, which occurs in connection with the conjunctiva and lids. Usually on the first or second day following such a fracture, there appears beneath the orbital conjunctiva a slight hemorrhage which is followed later by an infiltration of blood in the skin of the lower lid on the affected side. The hemorrhage is most frequently in the lower orbital conjunctiva and lower lid, but may rarely appear in the upper orbital conjunctiva and folds of skin in upper lid.

Strabismus.—Degeneration referable to the motor oculi nerves or to localized areas in the brain producing paralysis of one of these nerves, or perhaps all of them, sometimes comes as a result of such systemic diseases as diphtheria, la grippe, meningitis and syphilis.

Strabismus then is sometimes an aid to us in the determination of a previous existence of one of these diseases.

Nystagmus.—This occurs often in congenital ocular weakness and sometimes in hereditary and acquired affections of the general nervous system. But about the only systemic nerve diseases in which it occurs with any constancy as a symptom are locomotor ataxia and Friedreich's disease. In these diseases it is distinguished by the fact that the oscillatory motion of the eyeballs ceases when the eyes are at rest, whereas in true nystagmus there is a

constant oscillatory movement of the eyeball both while the eyes are at rest and while looking at an object.

Under this symptom I will also mention the fact that men who work in coal mines are peculiarly liable to nystagmus. It occurs principally in those workmen who have to maintain one constrained position on one side with eyes directed upwards. This particular strain combined with a defective light and blackened surroundings, depriving the miners of any defined retinal impressions seems to cause a derangement in the co-ordinating centres; hence, nystagmus. A permanent relinquishment of mine work is followed by a cure in many cases.

Having touched upon some of the most potent external considerations of the eye with reference to the subject of this paper let us pass on to another very important theme.

Internal Considerations.—The pathological changes that take place in the eyes as a result of systemic diseases, when considered in connection with other clinical phenomena arising with such diseases, furnish valuable aids in arriving at a definite diagnosis in many instances, and in a few cases these changes alone can be depended upon as positive evidence of the invasion of disease processes tending toward fatal results.

Optic neuritis.—The systemic diseases which produce optic neuritis are syphilis, diabetes, anemia, uterine affections, myelitis, and some of the acute infectious diseases, toxemia from excessive use of alcohol and tobacco, Bright's disease, intra-cranial tumors, and lead and other drug poisoning.

Optic neuritis in these diseases has no peculiarity that makes it a pathognomonic symptom of any one of them, but the fact of its presence combined with associated symptoms that may be found in a disease in question may enable us to settle the fact as to which disease we are to treat.

Optic atrophy.—This is common after severe grades of optic neuritis, and may therefore be one of the symptoms of one of the constitutional diseases mentioned under optic neuritis. It is frequently the result of spinal disease, especially locomotor ataxia.

Choroiditis.—Purulent choroiditis is frequently the result of a metastatic infection from other organs, e. g., the lungs, pleura and

heart. Exudative choroiditis is usually due either to syphilis or to tuberculosis—most frequently syphilis, especially when combined with retinitis. It is often that a diagnosis of syphilis can be made alone upon what the ophthalmoscope reveals in the ocular fundus, for sometimes syphilis manifests itself unmistakably there whilst its appearance elsewhere may be shrouded in doubt and obscurity.

The choroiditis of miliary tuberculosis can be distinguished from other forms by the characteristic choroidal nodules, their rapid growth and the absence of pigment in these inflammatory areas.

Retinitis.—The most common form of retinitis is that due to syphilis, in which form it is most frequently associated with choroiditis and commonly with iritis. The external layers of the retina are especially involved in this particular inflammation.

Retinitis involving the internal layers of the retina is caused by disease which produces degenerative changes in the blood vessels or a change in the blood constituents. A hemorrhagic retinitis is due to vessel changes; whereas blood changes in the retinal vessels are usually due to albuminuria, leukemia or diabetes.

Hemorrhagic retinitis may be due to heart disease, gout or rheumatic diathesis, pernicious anemia, syphilis, sepsis, strain as in parturition.

Retinitis albuminurica is characterized by the fact that it is most frequently a bilateral affection, and with it we find a hazy or a diffuse cloudiness of the retina; increase in size of veins and decrease in size of arteries; hemorrhages of varying depths in the retina, sometimes flame-shaped and sometimes round or orbital, and usually many and small; white glistening spots mostly at the macula and presenting a star-like appearance at this point.

This in detail is a true picture of albuminuric retinitis and one which is of great diagnostic and prognostic value, for it is indicative of serious kidney lesion. By this picture alone the oculist is often enabled to diagnose a case of Bright's disease, and many are the instances that an unfavorable prognosis can be based upon it.

Retinitis diabetica is differentiated from retinitis albuminurica by the presence of serrated or semi-circular bright spots between the

superior and inferior temporal branches of the central artery, by the absence of the star-like picture at the macula, by a normal disc and by a limited opacity in the retina.

Vitreous opacities.—A dust-like opacity of the vitreous humor is very characteristic of a syphilitic disease of the retina and choroid, and when we find this condition present it is worth while to look well into the cause; and if it be the result of latent syphilis an anti-syphilitic treatment can be instituted to great advantage.

Subjective Symptoms.—There are a few of those that I would like to call attention to as being worthy of consideration under the heading of this paper.

Amaurosis.—Among the systemic diseases that may cause this, locomotor ataxia is first to be mentioned, for the reason that it is perhaps the most frequent cause. In this disease, the amaurosis usually starts with the beginning atrophy of the optic nerve and is accompanied by an eccentric contraction of the field of vision. Sometimes a central scotoma appears as the first ocular manifestation of the spinal disease.

Excessive hemorrhage from stomach, bowels, or uterus is frequently followed by blindness. When the hemorrhage is from the stomach the blindness is often of unfavorable prognosis.

Amaurosis occurs often in neurasthenia and hysteria. Sometimes diabetes and ptomaine poisoning are the causes, while in other cases drugs constitute an important cause. Among the drugs that have caused amaurosis are quinine, lead, bromides, coal tar antipyretics and alcohol and tobacco.

Night blindness.—This is distinctly a symptom of retinitis pigmentosa in which disease the field of vision becomes gradually contracted until finally the last remaining control region becomes blind. Many of these cases are in the off-spring of parents that are blood relatives. In a few, a syphilitic taint seems to be present and in a few other cases the cause seems to be a local one due to an inadaptability of the retina to light perception.

Contraction of the field of vision.—A concentric contraction of the field of vision without ophthalmoscopic changes is a symptom of syringomyelia. This is also a symptom of traumatic neurosis, popularly known as railway

spine. This symptom is found in quinine amaurosis also.

Visual acuity.—In most systemic diseases producing pathological lesions in the eye, the visual acuity is altered from a degree of approximately normal vision to a complete loss of vision depending upon the particular lesion and extent thereof. The visual acuity, however, affords no pathognomonic symptom of any particular systemic disease.

Errors of refraction are doubtless responsible for many systemic diseases and for the exaggeration of many others, and by an elimination of this element in the cause we may be enabled to arrive at a more definite diagnosis in some cases.

Time forbids an elaborate enumeration of all the eye symptoms that might aid us in diagnosing systemic diseases, but with the foregoing I have tried to deduce from the experience of good authorities those symptoms which my own experience has taught me to be of most practical value.

THE RHEUMATIC CYCLE IN CHILDHOOD.*

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Rheumatism is so often associated in our minds with elevation of temperature, painful, swollen joints and redness of the parts involved, that the various manifestations of the disease in childhood are apt to be overlooked. A family history of rheumatism, a personal history of rheumatism, a history of chorea, of frequent attacks of angina or tonsillitis, attacks of protracted vomiting, a history of frequent colds or attacks of asthmatic bronchitis, or evidence of heart impairment should be of decided value in drawing our attention to the nature of the illness.

Owing to the protean forms of rheumatism in childhood, the disease was formerly supposed to be rare in early life. The frequency and popularity of the disease in childhood is now a topic of general study, and as Cheadle has aptly said, "the history of rheumatism may be the history of the whole childhood." The term "rheumatic child" has a peculiar and distinctive significance; nevertheless, from various

*Read before the Richmond Academy of Medicine and Surgery, March 24, 1908.

authors much objection has been raised against the word rheumatism.

Of the various manifestations of rheumatism in children, the most common are tonsillitis, endocarditis, articular forms, chorea, growing pains or muscular rheumatism, torticollis and anemia; less frequent manifestations are purpura rheumatica, erythema nodosum marginatum and papulatum, pericarditis and subcutaneous tendinous nodules.

Eight per cent. of the 10,000 cases of children who came to the Vanderbilt Clinic suffering from various diseases during the three years preceding 1905, were of some type of rheumatism. It is not uncommon for several types to be combined in the same child, and it is often difficult to say which manifestation appeared first.

The most frequent form of rheumatism is tonsillitis. This occurs in about 35 per cent. of all cases of rheumatism—11 per cent. of the tonsillitis cases being complicated with other types. (The statistics I have used in this paper were collected by Dr. R. H. Connell from 500 cases of rheumatism selected from 10,000 cases at the Out-patient Department of the Vanderbilt Clinic. *Archives Pediatrics*, January, 1906).

Many authors, including Jacobi, regard not only the tonsils, but also the general lymph apparatus of the pharynx as the source of infection. The fact that tonsillitis is the commonest form of rheumatism shows that the tonsil is the most common avenue of infection, the *locus minoris resistentiae*.

The most frequent complication of tonsillitis is endocarditis. The following case is illustrative: "Boy, aged 10 years, enlarged tonsils, sore throat, one week later rheumatism, mitral murmur; eleventh day, pleurisy, empyema, nephritis; death, 66th day." (*The Lancet*, May 20, 1905, p. 1333).

The next most frequent variety of rheumatism is endocarditis, occurring in 23 1-2 per cent. of cases. Endocarditis may develop during a mild torticollis or tonsillitis. Osler, in 1881, said that he did not think rheumatism was the cause of many cases of ulcerative endocarditis. In the Gulstonian Lecture, delivered in London by Dr. Osler, on malignant endocarditis in 1885, the first case mentioned is that of a lad aged 11, who had chorea, in 1880, for

a second time, apparently recovered; in 1881 chorea returned, and in ten days, endocarditis of malignant type was manifest, death ensuing on the 16th day after onset of chorea, rheumatic fever being the initial cause. Fifty-three out of 209 cases of malignant endocarditis reported by Osler, were caused by rheumatism. In children, simple endocarditis is common, while ulcerative endocarditis is rare.

If endocarditis does not come with the first attack of rheumatism, it is apt to be seen in later attacks. It is frequently the case that rheumatism is not diagnosed until endocarditis is discovered.

Heart lesions as a result of rheumatism are more common in children than in adults. According to some authors, 61 per cent., according to others, 81 per cent. of rheumatic children show endocarditis. As a rule, muscular degeneration of the heart and vessels is not present, and there is not so much danger from endocarditis in children as there is in adults.

Articular forms of rheumatism embrace 23 1-2 per cent. of rheumatic cases. A Russian physician describes a case of articular rheumatism in an infant two weeks old, the mother having the same trouble while nursing (Shengiledzr, *Roussky Vrach*, Feb. 5, '05).

Shafer says the disease may be transmitted through the placenta, Dr. D. J. Miller, at the meeting of the American Pediatric Society, 1889, reported a case of articular rheumatism in an infant twelve hours old, whose mother had rheumatism when the baby was born. Dr. Miller collected 27 cases of true articular rheumatism in infants under one year old. The disease is so rare under twelve or fifteen months of age that the majority of cases giving articular symptoms at this age are scurvy; cases appearing after 15 months or two years are articular rheumatism, for after this age scurvy is exceedingly rare. When there is redness and heart complication in young infants, the infection is invariably due to the gonococcus. Pain in the knee and inner aspect of the thigh is invariable to tubercular osteitis at the hip-joint, and should not be mistaken for rheumatism. Limitation of hipjoint motion points to hip disease, as the hipjoint is rarely involved in rheumatism. The onset of tubercular pains is very gradual. Now and then, a case of syphilitic periostitis is mistaken for rheumatism.

The next variety of rheumatism is chorea, which embraces about 14.1-9 per cent. of the cases of rheumatism. Sir Dyce Duckworth believes that chorea is undoubtedly cerebral rheumatism; he believes that chorea is caused by a micrococcus or diplococcus already described by Boynton and Paine, or the streptococcus aus chorea described by Wasserman. The occurrence of chorea may be the sole manifestation of an attack of rheumatism, being thus true cerebral rheumatism. The diplococcus rheumaticus has been cultivated from the blood of patients suffering from chorea: "The rheumatic toxin has certainly something specific in its nature, though it varies in quality, and the degree of its virulence. The clinical evidence in favor of the rheumatic nature of chorea is stronger than the bacteriological." (Sir Dyce Duckworth, *Brit. Med. Journ.*, 6-23-06).

In 1893, Osler spoke of the association of chorea and rheumatism depending on a virus yet unknown. Out of 1,000 cases at the Children's Outpatient Department at Bellevue Hospital, chorea claimed 2.4 per cent.

Not unfrequently, chorea is the first manifestation of a rheumatic condition to be followed by endocarditis, or with no other symptoms. Fifty-six per cent. of Holt's cases gave unmistakable evidence of a rheumatic diathesis, excluding cases with growing pains. Holt points out that it is rather striking that the statistics of neurologists, almost without exception, have given a much smaller percentage of rheumatism in choreic cases than those taken from children's clinics and hospitals. The question hinges on what is rheumatism in a child.

Out of 111 cases of chorea treated by Cranley at the New York Polyclinic, there was a definite history of rheumatism in 63 cases. There is a large class of cases which may be classed as rheumatic chorea. There are also many cases of chorea in which no element of rheumatism can be found. Growing pains, or muscular rheumatism, embraces the next manifestation of rheumatism being about two per cent. of all cases. The condition is so very uncommon under fifteen months of age that nearly all cases presenting rheumatic symptoms under that age are scurvy. From the second to the third year, the condition is more common. The majority of the cases occur between the ages of five and ten years. Muscular rheu-

matism is persistent with a tendency to repetition, the pain recurring at the same time each day. It must be remembered that pain in the abdominal muscles is the earliest sign of Pott's disease. Torticollis occurs in about one per cent. of the cases, usually accompanied by tonsillitis or some joint lesion. Pericarditis occurs in about one-half of one per cent. of the rheumatic cases.

Purpura is so often associated with rheumatism that there can be little doubt of the close connection between the two conditions. Rheumatic purpura is less frequent than other forms of purpura.

Erythema marginatum, papulatum and nodosum, are other manifestations of rheumatism. Erythema nodosum is more frequent than the other forms. Menzer has shown that the same organism is found in the tonsils that is found in the tissues excised from a case of erythema nodosum. (*Trans. Amer. Ped. Soc.*, 1902, F. Forcheimer.) Cheadle, who pointed out the connection between erythema and rheumatism, shows that such conditions, while not frequent, should always suggest rheumatism.

Peliosis rheumatica resembles the articular form so closely that I shall not attempt to differentiate.

The forms of rheumatism in children are so varied that we have to be continually on the watch for some new development. It is also true that often one of the protean manifestations points to rheumatism. Another manifestation of rheumatism, recorded far more frequently by English than by American authors, is the presence of subcutaneous tendinous nodules. They are described as "oval, semi-transparent, fibrous bodies like boiled sago grains." They are more frequently found over the malleoli, about the back of the elbow, and near the patella, also over the vertebræ and scapula. They vary in size from a minute point to the size of an almond. They are freely movable and appear and disappear for weeks. They are more readily felt than seen; they can be seen, however, if the skin is drawn tight.

It will not do to omit anemia, for anemia is present both during and after rheumatism. A common error is to mistake the endocardial murmur of rheumatism with its accompanying anemia for the hemic murmur of simple anemia. It is significant to remark that

cervical adenitis, when prevalent, and not tubercular, is relieved by large doses of salicylate of soda.

It has been very definitely proved that rheumatism is an infectious disease of microbic origin. The most important work concerning the cause of rheumatism has been done by Messrs. Poynton and Paine (*Lancet*, May 4, 1904). They found that a diplococcus could be obtained in pure culture from cases of acute rheumatism, and when injected, the culture would produce a similar affection in the joints in monkeys and rabbits. The diplococcus rheumaticus may assume streptococcic forms or even bacillary type. The organism is .5 to .1 micron in diameter. It may be isolated from the blood, urine, joint fluids and tonsils. A large number of observers have discovered the diplococcus independently.

The infection is not always caused by the same organism. Nearly all authors regard rheumatism as more prevalent and serious in the region of damp valleys and fresh water lakes. There is steadily increasing growth of the opinion that diet (certainly in the case of children) has little to do with rheumatism. If, as we believe, rheumatism is an infectious disease, it is not easy to see why it should be influenced by any particular diet.

Dr. Cook, of the first Peary Expedition to the North Pole, noted that the most northern Esquimaux, living largely on meat diet, were commonly afflicted with rheumatism. In Japan, where the diet is largely rice, rheumatism is very common. Dr. Parks, of the Stanley Expedition in South Africa, found rheumatism common where the natives lived on plantains.

There is less risk of relapse when proteid diet is increased. A strict adherence to milk and bread in a growing child that has rheumatism is very liable to prolong the anemia and seriously retard development. Meat and sugar may be restricted, but certainly not withheld if anemia is to be avoided after recovery from rheumatism.

Although not taking up the prophylaxis and treatment of rheumatism, I wish to point out the value of care of the teeth, and a proper mouth toilet in preventing tonsillitis. Adenoids and enlarged tonsils should be removed. Salicylate of soda should be used as a gargle in rheumatic children. Salicylate of soda, three

to five grains, three times daily for one or two weeks out of the month, is especially good to prevent attacks of tonsillitis. Iron freely given is a good preventive measure. Codliver oil is especially valuable for rheumatic children.

205 West Grace Street.

THE INJECTION TREATMENT OF HEMORRHOIDS.*

By LLEWELLYN ELIOT, M. D., Washington, D. C.

When a patient comes into your office, suffering from hemorrhoids, the first thing which enters your mind is an operation, and the suggestion is made to the patient even before an examination is made to make the diagnosis. This course is only natural, but he may, and often does, object to our proposed line of treatment. Ligature, divulsion, injection, etc., will then come in mind, and while, I believe the operative is the only course to pursue in the management of hemorrhoids, I have time and again, temporized knowing in the end, the patient would consent to a proper method.

"The injection treatment of hemorrhoids," I am perfectly aware, is classed as a method of the quacks; still I have some faith in it.

A hemorrhoid, whether it is internal or external, is nothing more nor less than a varicose hemorrhoidal vessel. Hemorrhoids are dependent on affections of the liver, or they may be due to the pressure of large abdominal tumors, or a pregnancy pressing upon the portal circulation. Constipation and straining at stool must also be reckoned as causes, for the mucous membrane in straining at stool will become everted to a degree, and the sphincter contracting upon this everted membrane will result in the formation of hemorrhoid.

In injecting a hemorrhoid, we must remember the upper portion of the hemorrhoidal plexus empties into the portal system, and the lower portion empties into the iliac veins; in this way a clot in a hemorrhoid may be carried to either the liver or the heart.

The method of treating hemorrhoids by injecting various substances into them originated, according to the researches of Andrews (*Andrews, Rectal and Anal Surgery*) with a physician in Illinois, who about 1871, employed a caustic mixture of carbolic acid and olive oil, injected by means of a hypodermic syringe.

*Read at a meeting of the Medical and Surgical Society of the District of Columbia, March 3, 1908.

He gave the plan a thorough test and then adopted the treatment, becoming an itinerant pile doctor. The method, he kept a secret, but the operation created a furor; he then sold the right, to use the treatment to physicians, both regular and irregular. Many perfect cures were the result of this exploitation. It is, therefore, only natural to suppose that many purchased the right who were neither medical men, nor men qualified in any way to employ the method. Thousands of sufferers were subjected to this plan of treatment, a few with bad results, but the majority obtained cure. Medical men, not in the inner circle, marveled at the results often obtained. Andrews finally procured the formula and published it in some of the medical journals. With this publicity came a stoppage of the sales of rights and the investigation of the treatment by the regular profession.

The majority of writers on rectal diseases mention the injection treatment, only to condemn it or give it very weak endorsement.

After having had two hundred successful and satisfactory results, Kelsey abandoned the method, because of an accident.

Tuttle thinks the method is well worthy of thorough consideration; he has employed it.

The internal hemorrhoid is the one for the injection treatment, while the external hemorrhoid should be removed. When the injection plan is the one adopted, neither the size, nor the number of the hemorrhoids will militate against injection; whether they are ulcerated or not does not debar.

The advocates of the injection plan of treatment of hemorrhoids are divided into two camps—the strong solution men, and the weak solution men—each class obtains good results—the former quickly, the latter more slowly. A weak solution will cause inflammatory conditions which will produce small thrombi in the veins; these thrombi become dislodged and as a result produce the accidents sometimes recorded; while the strong solutions cause an immediate necrosis of the entire mass, block up the mouths of the vessels and in this way act as a block to the escape of these thrombi into the veins. The necrosed masses dry and then fall off, leaving a clean surface beneath.

When Andrews studied the subject, he collected, from various sources, 3,304 cases treated

by this method. In these 3,304 cases, there occurred 171 accidents or bad results, and 13 deaths; this gives a percentage for combined deaths and bad results of .05, and for deaths alone .0039. In considering these ill results one must remember that cases of every sort were treated and every manner of man treated them; so, the percentages given are ridiculously small.

Let us analyze some of the accidents which occurred. The table gives 83 cases of violent pain; 10 cases of dangerous hemorrhage; 10 cases of severe inflammation; 8 cases of embolism of the liver; 35 cases of sloughing and other accidents; 19 cases of failure to cure. Now, violent pain frequently follows when a cutting operation has been done, and where the skin has been cut; it will also follow the application of different powders used as antiseptics; dangerous hemorrhage will frequently follow excision of hemorrhoids, the use of the cautery, or the slipping of a ligature; severe inflammation may follow any line of treatment and is often due to infection; embolism of the liver may follow cautery; sloughing frequently occurs notwithstanding our best efforts to prevent it; while failure to cure is oftentimes the result which follows any line of treatment. Therefore, these objections fall to the ground.

Stricture of the rectum is recorded in two instances; sudden and dangerous prostration occurred in one case; abscess of the liver in one; permanent impotence in one case; while carbolic acid poisoning was present once.

The percentage of each of these accidents is infinitesimal when compared to the number of cases treated. Stricture of the rectum may follow the cautery or the Whitehead operation; sudden and dangerous prostration may have resulted from the entrance of air present in the needle and not driven out until the vessel was punctured; it may have resulted from heart disability, anemia, or a neurasthenic condition; abscess of the liver and permanent impotence are unusual occurrences, but the number of instances of carbolic acid poisoning is restricted to one. Now, since carbolic acid forms the basis of all fluids injected, varying in amount from 3 to 95 per cent., it is very singular there were not more toxic cases. This is an accident we should all expect to encounter. Incontinence of feces is never seen; the same cannot be said of the operative treatment. Deaths

or accidents from anesthesia are never recorded, since it is not necessary to administer a general anesthetic. Where cocaine is employed the same liability to accident exists here as in any other case where this agent is employed. It is well to remember that in using cocaine for any operation, whether in the rectum or elsewhere, patience is a virtue.

To inject hemorrhoids, draw them well down after having dilated the sphincter. The needle is then thrust into the tumor and the solution driven in: the needle must not be too fine nor too sharp. The directions usually given are to inject a few drops, and to treat but one hemorrhoid at a sitting. I do not, however, always limit myself to a few drops, but note the effect as they are injected, and I have, as a general rule, injected all the tumors one after the other: of course, the size of the tumors controls the operator more than the number. The tumor whitens and swells, to shrivel and finally come away in a few days, leaving a clean, smooth surface. Sloughing will sometimes occur. In the event of pain being severe, morphia or a suppository of opium and belladonna may be required. Vaseline is used upon the swollen mass and it is returned to the bowel. It is rarely necessary to confine the patient to bed for more than twenty-four hours.

When Mitchell began his treatment his formula was carbolic acid, one part, and olive oil, two parts; he made several changes in it before being satisfied. Various formulæ have been tested and made public since the treatment was first adopted.

In the Brinkerhoff system, the solution is:
Carbolic acid, $\bar{3}j$.

Olive oil, $\bar{3}v$.

Chloride of zinc, gr. viij.

In the largest piles inject 8 minims; in the medium, 4 to 8 minims; in the small, 2 to 3 minims; in club-shaped painless piles near the orifice, 2 minims, and inject only the internal pile.

In the Rorick system, the solution is:

Carbolic acid, glycerine, aa $\bar{3}ij$; Fld. ext. ergot, $\bar{3}j$; water, $\bar{3}iiss$; mix.

Green, a travelling pile doctor, uses:

$\bar{1}\bar{2}$ Carbolic acid, $\bar{3}j$.

Creosote, gtt. x.

Acid hydrocyanic, gtt. i.

Olive oil, $\bar{3}j$.

Mix and unite under water.

Sig. Inject enough to turn tumor an ashen grey color.

I cannot see any reason for the direction to unite under water; there is nothing explosive in the formula, nor do I see any reason for the hydrocyanic acid which is extremely hard to obtain.

Yount uses: Solution of carbolic acid, 5 per cent. (acid carbolic, gr. xxiv; aquae desillat. $\bar{3}j$ M.), or a 3 per cent. solution (acid carbolic, gr. xviss, aquae destillat. $\bar{3}j$ M.)

Agnew uses: Plumbi acet. (C. P.); Sodii bibor. (C. P.) aa $\bar{3}ij$; Glycerine (Price) $\bar{3}j$. Mix in a two-ounce vial and let stand for twenty-four hours. Acid carbolic, Calvert's No. 1, $\bar{3}j$; Distilled water, $\bar{3}ij$. Of the first solution $\bar{3}vj$ are added to the second solution, and the solution is of a syrupy consistence ready for use. Many times the injection is followed by pain or ulceration.

Tuttle has modified the formula of Shuford, as follows: Acid carbolic, (Calvert's) $\bar{3}ij$; Acid salicylic, $\bar{3}ss$; Sodii biborat, $\bar{3}j$; Glycerine (sterile) q. s. ad $\bar{3}j$; M. secundem artem. Inject 2 to 10 minims.

The Givaud solution is: Acid tannic, 1 part; Acid carbolic, 2 parts; Alcohol, 4 parts; Glycerine, 8 parts. Mix.

Hoyt published a formula some years ago which gave him good results; it is: Acid carbolic, alcohol, partes equalis, diluted with six times its volume of water. He injected a few drops into the tumor.

Shaleeta, of the Jewish Hospital at Kieff, has modified the method of treating hemorrhoids with injections of carbolic acid and glycerine, by using pure liquid carbolic acid, injecting each pile with a Pravaz syringe to a certain degree of fulness, and completing the operation at one sitting. Two, three, or four syringefuls of the acid are injected according to the number and size of the tumors. For external piles, he uses a mixture of two parts of pure carbolic acid to one part of a 2 per cent. solution of cocaine. He gives the history of 69 cases treated in this way, and the results in all were highly satisfactory.

A tampon inserted into the rectum will exert enough pressure to prevent clots moving upwards; this should be left for a few hours.

1106 P Street, N. W.

SOME REFLECTIONS ON SCIENTIFIC MECHANOTHERAPY AND SO-CALLED OSTEOPATHY.*

By V. ULRICH, M. B., Richmond, Va.

Some five or six years ago, three eminent physicians of this State tried to stamp out in its beginning a new kind of treatment that has the quasi scientific name, Osteopathy. They failed in their purpose because the other party employed very clever lawyers and appealed to the public, especially the feminine part of it which preferably loves to be fooled. You all know these gentlemen: Drs. George Ben Johnston, Wm. S. Gordon and J. N. Upshur. Their righteous fight for the protection of the public turned out to be the greatest advertisement for the osteopaths.

I desire just here, to denounce the osteopaths as people who sail under a false flag. On their signs they call themselves Dr. So and So, Osteopath, and the people think everything is all right: You see he is a doctor—an osteopath—that is, something like an allopath or homeopath. The word osteopath, foolish as it is, is anyhow very catchy. As is the name of this so-called science, so is the treatment and the theory of it, foolish and irrational. I will return to this later.

A confrere and friend lent me some literature on osteopathy which I tried to read, page after page, in order to obtain full information on the subject; but after progressing to a certain point, I had to give it up. It was too much for me.

Some decades ago, a certain Mr. Still, of Missouri, purloined a part of a good, acknowledged, 80 years old, method, (Swedish Movements Cure and Massage), spoiled it as only an ignoramus can, added some fantastic speculations to it, a little spiritualism, a dash of physiology and a few more ingredients. This queer compound he called Osteopathy—bone-setting in plain English.

It would be beneath the dignity of the Academy to discuss seriously the methods of osteopathy; but several times, some of the younger members have asked me as to the difference between my profession and it. The only answer I could give was that the osteopaths used their hands in the treatment of patients as

I do. But, I stand on a perfectly different base. I do not claim that I can cure every disease. I only claim that I treat certain diseases, of which I fail to benefit some, while others are cured or, at least, improved. I do not claim that I can cure fevers, syphilis, gonorrhea, smallpox, cholera morbus, diphtheria, etc.; but the osteopaths in their textbooks and in the pamphlets with which they inundate the country, claim to do so.

A school that teaches that it can cure every disease is, *a priori*, suspicious. No man who keeps his five senses clear will believe in such a theory; a woman not only possibly, but probably, will. They will do it just as a certain Christian sect did a few centuries after Christ. When they could not follow certain absurd dogmas, they said, simple-minded, *Credo quia absurdum, i. e., "I believe because it is crazy."*

I hear from a colleague, who had a dispute with some osteopaths, that they are probably as well posted on anatomy as the average M. D. This may or may not be so; I know not. The osteopath should have, at least, a good knowledge of osteology; but the balance, I believe, is a rather dim field for these omnipotent healers. That they, by manipulations, can affect the nerve-centers of the brain and spinal cord is beyond my poor intelligence. I have never tried and never expect to try myself on humanity on such vague speculations.

They believe that every disease is due to a lesion that is originated by a dislocation, twisting or bending of a bone, preferably the vertebræ, from the atlas down to the coccyx. By correcting this hypothetical displacement, replacing the bones in their normal position, pressure on the nerves is released, thereby the lesion cured, and the patient pays his bill, takes up his bed and walks away. Very neat, and simply explained.

Never in the history of medicine have we heard of so many dislocated vertebræ, twisted ribs, etc., as in these late years. An example: According to C. Hazzard, D. O., malaria is a disease, which *although due to the activities of a specific germ, the hematozoon of Laveran, yet presents marked bony lesions* which account for the manifestations of the germ within the system! The four immortal laws of Koch seem not to be taught in osteopathic schools. The truth of Koch's laws cannot be doubted.

*Read before the Richmond Academy of Medicine and Surgery, April 28, 1903.

If there are lesions in the presence of the germ, the germ must be the causative factor; or, perhaps, from an osteopathic point of view, the lesions produce the germ. The statement could be proved by cultivating the germ, injecting the pure culture in a series of subjects and producing, besides the malaria, *osteopathic lesions*. I have never heard of any bony lesions after malaria, shown by autopsy. Since the patient was cured after a few treatments the disease was probably not malaria. I have my sincere doubts about the diagnosis.

Should you like to know the exact location of the malarial lesion, it is a *marked lateral deviation of the 9th and 10th dorsal vertebrae and a resulting downward luxation of the 10th rib.* (sic) The author forgets to tell us whether the deviation of the vertebrae is to the right or left.

One may see in their text-books bone-preparations of all these twisted, dislocated, subluxated ribs and vertebrae, but instead of being provided with ligaments, which would be good evidence of the dislocation, they are connected by wires. So, I think these pathologic artifacts are fixed to instruct a believing adept and a foolish public.

Another case: No scientific masseur would undertake to treat Potts' disease. The osteopaths do. According to C. Hazzard, D. O., the same lines should be followed as in the treatment of *lateral curvatures*. The author seems not to know what Potts' disease is. Here, we have softening of the intervertebral substance and caries of the bodies of the vertebrae. In lateral curvature, we have weakening of the muscles and ligaments as the cause. Caries, its treatment osteopathically, is prudently not mentioned. But he treats erysipelas very successfully; also, such minor troubles as grippe, whooping cough, diphtheria and typhoid fever. In malaria, the prognosis is good.

According to the great Mr. Still, D. O., of Missouri, no second treatment need ever be given. For my part, I believe the first one could have been omitted also, for the benefit of the patient's pocket book.

A. B. Campbell goes so far as to treat insanity. If it does not tire you, I shall read what an osteopath can accomplish, according to the gentleman named. He says "the osteopath is not dismayed or daunted before any disease,

but he prefers to treat chronic diseases, thus not materially interfering with other modes of practice, although he cures colds, pneumonia, cholera morbus, diphtheria, brain fever and other acute conditions:

Eye and Ear.—Granulated lids, weak eyes, astigmatism, deafness.

Heart and Lungs.—Pneumonia, incipient consumption, pleurisy, irregularities of the heart.

Liver and Kidneys.—Bright's disease, diabetes, jaundice, torpid liver, gallstones, biliousness.

Bladder and Urthral Disease.—Stricture, enlarged prostate, cystitis, incontinence of urine.

All Stomach and Intestinal Disorders.—Catarrh of stomach or bowels, flatulency dyspepsia, indigestion, constipation, piles, flux, dysentery.

All Dislocations and Deformities.—Hip and joint diseases, spinal curvatures, dislocations and sprains, stiff joints, atrophy.

Nervous diseases.—Neurasthenia, headaches, tic douloureux, St. Vitus dance, sciatica, paralysis agitans, locomotor ataxia, all forms of neuralgia and paralysis.

General Diseases.—Rheumatism, asthma, catarrh, goitre, eczema, bronchitis, wry neck, enlarged tonsils, loss of voice, cerebrospinal meningitis, milkleg, varicose veins, erysipelas, cold extremities, dropsy, malnutrition, lumbago.

Diseases of Women a Specialty.—Irregular, painful, suppressed or excessive menstruation, leucorrhoea, prolapsus, barrenness.

"The above are the classes of diseases that medicine has failed to cure. We are glad to get them, because we cure about 85 per cent. of the cases we take; benefit 95 per cent. and fail in 5 per cent.* Of course, some wait until they have lost reactive power—such we do not want—and frankly tell them so."

The laity, who hear of all the wonders that osteopathy can do, say it is the grandest thing. Hear now, what the inventor, Mr. Still, D. O., of Missouri, says it is:

"Many people naturally ask: What is Osteopathy? Osteopathy is simply this: The law of human life is absolute, and I believe that God has placed the remedy for every disease within the material house in which the spirit of

*Summa: 185 per cent? Author.

life dwells. I believe that the Maker of man has deposited in *some part or throughout the whole system of the human body* drugs in abundance to cure all infirmities; that all the remedies necessary to health are compounded within the human body. They can be administered by adjusting the body in such manner that the remedies may naturally associate themselves together. And *I have never failed to find all these remedies.* [Why does he not tell us in which spot these patent medicines are to be looked for?] At times, some seemed to be out of reach, but by a close study, I have always found them. So I hold that man should study and use only the drugs that are found in his own drug store—that is, in his own body."

"I do not believe, and I say this only after forty years of close observation and experiments, that there are such diseases as fever—typhoid, typhus or lung—rheumatism, sciatica, gout, colic, liver disease, croup, or any of the present so-called diseases. They do not exist as diseases. (*Ladies Home Journal*, January, 1908.)

I suppose, gentlemen, your judgment will be that this is nothing but bosh.

I believe you gentlemen of the profession here in the South have neglected mechanotherapy too much. It is different in the North. In some respects, however, you are not to be blamed. Here, its use has been abused more than anywhere else. It has been left in the hands of "mammies," barbers, bath attendants, and others, instead of the doctor or the scientific masseur. That is a mistake, and one of the reasons why this country is flooded with osteopaths. A common objection from the osteopathic side is that massage is unscientific. They are right when they think of massage as used in Turkish baths. But the difference between a scientific masseur who has his diploma from a recognized board of health, and a bath-masseur is about the same as that between an M. D. and a D. O.

What I have said here should not be regarded as a personal reflection on some osteopaths of this city. I do not know them. Most people speak of them as gentlemen, and I think them to be professional gentlemen, too, but suffering from *osteopathic illusions*.

319 West Franklin Street.

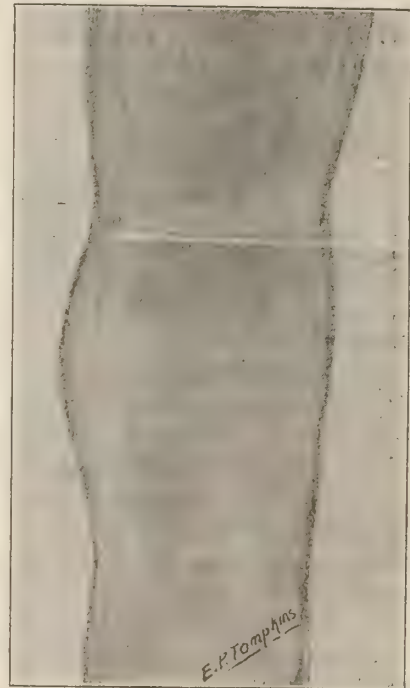
KNEE CASE.—MARTIN.

By EDMUND PENDLETON TOMPKINS, M. D.,
Roanoke, Va.

Some months ago a case came to my care which interested and, at the same time, puzzled me. This was a knee-joint case in a boy nine (9) years of age, the youngest in a family of twelve children of a farmer. He had always been healthy—came of a healthy robust family—a vigorous wiry lad whose only illness had been an attack of tonsillitis some years previously.

His history was that several days previously he had cut his foot on a piece of glass while wading in a spring-branch. About forty-eight hours later, he began to complain of pain in his knee, which became very sensitive to pressure. Any attempt on the part of the patient to move the limb or any pressure by others evoked an outcry from the boy.

After trying various domestic remedies, and spending two sleepless nights with him, his father asked me to see him. I found him in bed with knee slightly flexed lying on a pillow,



NORMAL KNEE—LEFT LEG.

and suffering great pain, which was aggravated by any attempt to handle it. Inspection showed the cut in his foot to be a gash of about

three-fourths of an inch long and barely through the skin, not inflamed, and with no discharge, but inclined to heal, which it readily did in a few days time under a simple antiseptic dressing. There was no redness then or later, and at that time no swelling detected, but loss of function complete in the knee, with great pain and tenderness. Temperature about 101; tongue slightly coated, and complete loss of appetite. Next day there was a little puffiness above and to inner side of patella without redness but with *some*, though not marked, prominence of superficial veins, which was taken to indicate an engorgement of the deeper ones. Local anodyne applications, as antiphlogistine, carbolic acid solution, etc., failed to relieve the pain.

I made a presumptive diagnosis of osteomyelitis, called in Dr. Davidson, of Lexington, in consultation, and went to the house prepared to operate. I had seen the boy in the morning, then went back to my office to telephone to Dr. Davidson. He was delayed and then by the time he had driven the ten miles and we had examined and discussed the case it was night-fall. He concurred in the presumptive diagnosis, and the proposed surgical treatment; so we at once made arrangements to open up the bone. The boy strenuously objected and fought with all his might against taking the chloroform; but backed by his parents, it was forcibly administered, the boy giving vent to volleys of oaths that would have done credit to a New York drayman, until the anesthetic subdued him. The whole family, including the father, then burst into tears and fled from the house, camping on a hill about a hundred yards away, leaving only a couple of neighbors to aid us; one of them held a smoky kerosene lamp and the other handed things. With the boy stretched out on the kitchen table I chiselled into the tibia about at the epiphyseal line, entering the medullary cavity at its extreme upper end. I was expecting to find pus either under the periosteum or in the cavity of the bone and was somewhat disappointed not to find it in either place—only a few drops of serum exuding from the wound. However, I enlarged the opening in the bone, and put into it a small wick of sterilized gauze, dressed the wound aseptically and put the patient to bed. He awoke from the chloroform without nausea,

answered a few questions and then went to sleep again. I remained an hour or so and as he seemed to rest quietly I went home.

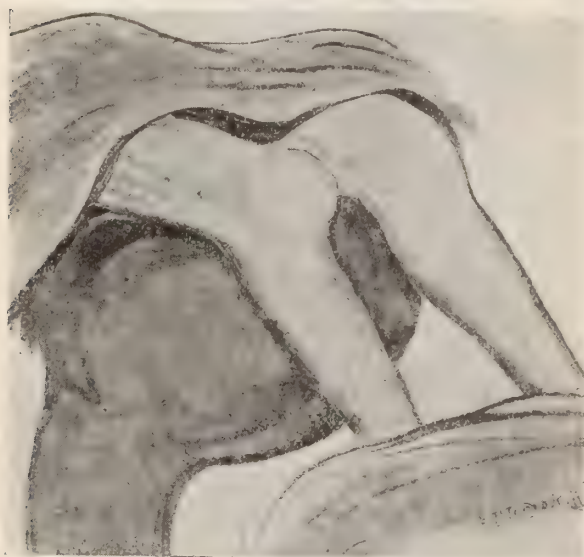


KNEE CASE (MARTIN)—LEFT LEG.

Next morning I was told he had slept well—the first sleep any of the family had had for three nights, and was free from pain—this without opiate in any form. He never suffered any more pain of consequence, and though the knee was still somewhat sensitive, he had twisted his leg about so as to partially disarrange the dressings. I put on fresh dressings, the first one being only a little moistened by serum exuding. He was given internally calcium sulphide in moderately large doses, and this treatment was continued for several weeks.

Some days later I found a few drops of pus on the dressing, which may have come from the dressing having slipped. However, this was checked by hydrogen peroxide and bichloride wet dressing, and never was of a thoroughly purulent character. The swelling above the knee continued, and some days later the synovial sac was found distended, the patella raised up, *floating* so to speak, giving characteristic clicking sensation against the femur when lightly percussed. I debated whether to aspirate or not,

but decided to wait. The tenderness gradually diminished till it occupied only a space as large as a five-cent piece; then after some weeks disappeared altogether. In about two weeks, the boy got so he could hobble around, and seemed to get on so well I did not confine him to bed. The enlargement of the joint continued (though the function of the joint was perfect), for more than a year. Sometimes there would be a distention of the sac lasting for several days, and then subsiding to reappear later, then disappear again.



KNEE JOINT CASE—DR. R. WILLIAMS.

The wound healed, but later reopened, and discharged a thin fluid, and a fistulous opening remained. I was on the point not only of aspirating the sac but of cutting the fistula, but as the boy seemed to suffer no inconvenience from either I was satisfied to let well enough alone. I proposed to put the leg in plaster, but the family objected; so I left it off. After a long time, a year perhaps, a small piece of dead bone which I did not see, but was described as the size of a grain of coffee worked out; then the fistula healed and so far as I know has never reopened.

Now what was it? The rapid onset with fever and severe pain, the history of a wound and of repeated wading in cold water, the extreme tenderness and absolute loss of function, absence of swelling in the beginning, but coming on later, lack of redness—make up a complexus

of symptoms much resembling osteo-myelitis. On the other hand, the effusion into the joint, becoming of a chronic nature, the shape of the swelling somewhat characteristic, the appearance of the discharge from the wound, the persistence of a fistula, etc., remind one of tubercular trouble.

Just what the operation did I am frank to say I do not know. I undertook it expecting to evacuate pus, but no pus was there. What I do know is that the pain, apparently excruciating before, was wholly relieved and permanently relieved afterward. As to the sulphide of calcium, I cannot say whether or not it did good, but I am inclined to think it did. I had never heard of its use in osteo-myelitis, but it is used and approved in other pus cases. At all events, the boy was up and going about in a short while, and runs, jumps and plays now like any other boy in spite of a slightly enlarged joint.

THE PATHOGENESIS OF TABES DORSALIS.

By TOM A. WILLIAMS, M. B., C. M. (Edin.), Washington, D. C.

Controversy as to the pathogeny of tabes has not ceased since Duchenne surmised its sympathetic origin, and Charcot later supposed it to be a posterior column dystrophy, similar to that of Friedreich's ataxia. His great authority prevented due attention to the researches of Obersteiner and his followers until the memoir of Redlich appeared in 1896. The discoveries as to the syphilitic etiology of tabes caused greater attention to the work of Nageotte, who in 1894 had indicated the constancy of lesions on the radicular nerve at the point where it receives its meningeal sheaths. These lesions correspond to one or other stage of the granulomatous process, varying as they do from simple round cell infiltration, to granuloma, and even breaking down with formation of cavities. They are due to primary chronic meningitis, evidenced by the lymphocytosis found by spinal puncture during life and post mortem when skilfully looked for; although the tendency of the process to resolution and fibrous tissue formation leaves only a slight thickening in the membrane, already fibrous by nature.

The changes in the cord are consecutive to this. That this is so, is proved by similar changes of the posterior column after disease of,

or experimental section of individual roots, and by the changes occurring in the mechanical affection of the radicular nerves due to the increased intraspinal pressure caused by the growth of cerebral tumors.

The noxa falls upon the root fasciculi very disparately; and this corresponds to the disparate nature of the sensory troubles, which do not preponderate so much, as formerly supposed, upon the fibres which subserve the sense of attitudes and of muscular movement; for it is now definitely shown that cutaneous sensations are always involved more or less, though probably later in the disease.

The superficial lightening pains described by Gowers and the psychometric analysis of the sensibility of tabetics by Vaschide are an index to this; while the researches of Head enable us to explain the modifications in terms of deep, protopathic, and epicritic sensibility. The fibres subserving the life of internal relation may differ morphologically from those subserving external relationship as contended by Pierre Bonnier, with particular reference to the eighth nerve, the principal posterior root, where the cochlear portion whose function concerns the outside world, is affected only rarely, while the vestibular portion, concerned with intrinsic relationship, is involved very commonly indeed in the tabetic process.

However, this may be, it is certain that impaired sense of attitudes, is always accompanied by impairment of the deep pain sense and of perception of the vibrations of the tuning fork by the bones; and as these functions are conveyed in the same peripheral path, while they are separated within the cord, clinical evidence is in entire harmony with the pathogenetic theory advanced by Nageotte. The data furnished by the optic nerve symptoms are similarly best explicable by a meningeal affection, involving in this case not a posterior root but a homologue of an intra-spinal path.

The tabetic symptoms referable to the sympathetic do not differ from those produced by experimental section of the spinal roots, nor from those in syringo-myelia, which, however, attack the cell bodies in the intermedio-lateral column. Charcot's negation of changes in the sympathetic is effectively disproved by the researches of Roux, who found the medulated fibres markedly decreased in tabetics.

The anterior roots are not unaffected; but the relative absence of serious myopathies early in the disease is accounted for by the rapid regeneration of the fibres. This is shown by the "terminaisons croissances" exhibited by Nageotte's preparations and by the results of section experiments. The regeneration of the posterior root fibres extends only to Redlich's ring, at which they lose the neurilemma sheath. Finally, evanescent lymphocytosis and reflex iridoplegia, the two most characteristic signs of tabes, are found in many cases of syphilis without other tabetic symptoms; indeed both sometimes occur in the secondary stage, the former in as many as 40 per cent.

The contention of Babinski and Nageotte is, therefore, accepted that a chronic syphilitic meningitis is responsible for what has been called tabes dorsalis and that it was formerly disregarded on account of the tendency to the occurrence of resolution and fibrosis of the lesions.

The practical application of this conclusion is of the greatest importance in the treatment of the disease. Cases taken early may be completely arrested; and in all cases the active manifestations may be resolved if adequately treated before the destruction of the noble elements has occurred, though naturally the residues of former exacerbations cannot be removed.

Stoneleigh Court.

Analyses, Selections, Etc.

Non-Identity of Hyoscine and Scopolamine Hydrobromide in Refractive Work.

In view of the very earnest claims of the *Journal of the American Medical Association*, as to the identity of hyoscine and scopolamine hydrobromide in therapeutic effects, as in its chemistry, it does seem strange that that Journal has so long held in reserve the paper by Dr. Wendell Reber, of Philadelphia, read in the section on ophthalmology, at the session of 1907. Dr. Reber's conclusions oppose the assertions of the Journal. As far back as 1899, Dr. Reber found that a drop of one-tenth per cent. solution of hyoscine hydrobromide in the right eye, while one drop of the same strength scopolamine solution in the left eye, in a youth with normal eyes, produced a reaction of the ciliary muscles decidedly different. Years afterwards,

he made like experiments on three persons. Full dilatation of the pupil occurred in thirty minutes with hyoscine in the females, and forty-five minutes in the males. Under scopolamine dilatation occurred in forty minutes in the females, and sixty minutes in the males. Therefore the average time to produce pupillary dilatation under hyoscine was thirty-six minutes, and forty-seven minutes under scopolamine.

With reference to the effect of these two preparations on accommodation, hyoscine in these test cases showed itself approximately fifty per cent. more potent than scopolamine. Both preparations were procured from Merck & Co. In other words, these products may be chemically identical, yet pharmacodynamically, produce different results.

Dr. Reber suggests that there may be a pharmacodynamic difference between other substances known to be *chemically* identical, such as caffeine and theine, cocaine and stovaine, yet exhibiting wide differences in their action.

In the discussion of the paper, Dr. Albert E. Bulson, Jr., of Fort Wayne, Ind., stated his agreement with Dr. Reber that "hyoscine is more effective than scopolamine as a cycloplegic."

If such difference in effect upon the eyes occurs when using hyoscine and scopolamine, as contended by Dr. Reber, it is not unreasonable to suppose that like difference may be manifest in favor of the use of the H-M-C, anesthetic mixture of the Abbott Alkaloidal Co.

Book Notices.

Psychic Life and Laws. By CHARLES OLIVER SAHLER, M. D. New York: Fowler & Wells Company. London: L. N. Fowler & Co. Cloth, 12mo., 219 pages.

This book considers the "operations and phenomena of the spiritual element in man," as applicable to treatment of disease. It shows little confidence in drugs, and, casually read, it is a book that is more apt to do damage than good in adding to the nihilistic doctrine as to the use of medicines. In the Appendix, the names of several parties are used as disbelievers in drug therapeutics; and in cidents are given where drugs were used and the patient yet became worse or died. Such

statements are nonsense in view of common experience. It is too general experience to recognize benefit, after correct diagnosis and proper therapeutics. No one denies the added help of confidence in many conditions. A few apparent good results occur in the history of "faith curers," in the practice of so-called "Christian Science," etc. But such things are not curative of malarial diseases, as is quinia, or syphilitic troubles, as are mercury and potassium iodide, etc. Of course, there are conditions incurable as yet by drugs, however rationally administered, or by "spiritualism" and such things. No one denies the helpfulness of hope of recovery, and confidence in the medical attendant. But the subject is too important to be properly reviewed in a book notice. We advise readers to read *cum grano salis*.

Practical Life Insurance Examinations. By MURRAY ELLIOTT RAMSEY, M. D. Philadelphia and London: J. B. Lippincott Company. 1908. Cloth, 12mo., 231 pages.

This book contains a chapter on "the insurance of substandard lives," which, aside from its importance in the reckoning of liabilities, contains interesting data and reading for the general practitioner. As a whole, the work is systematically arranged, and is well indexed; and the subjects are discussed with excellent fairness and clearness. It is a volume that, as soon as its contents are made known, must become popular with all doctors who undertake conscientious examinations for life insurance companies. After chapters on external examinations of applicants, stress is laid on personal history. Physical examination of the chest—including consideration of the pulse, heart neuroses, etc., and abdomen occupy over 100 pages. After a chapter on urinary examination, a most important chapter is added on "diseases and conditions affecting life insurance." The book will prove an invaluable one to life insurance medical examiners.

Diseases of the Nose, Throat and Ear. By WILLIAM LINCOLN BALLANGER, M. D., Professor of Otology, Rhinology and Laryngology, College of Physicians and Surgeons, University of Illinois, etc. Illustrated with 471 Engravings and 16 Plates. Lea & Febiger, Philadelphia and New York. 1908. Cloth, 8vo., 905 pages. Price \$5.50 net.

Diseases of the nose, throat and ear are so

often interdependent that it is singular their consideration has not been more frequently included in books with title similar to this. The author's eminence in the departments of study of which this book treats warrants him in bringing it out; and he has done much good in issuing it. Causes and effects are given systematic attention, and diagnostic points are well made. Therapeutic methods and operative technique are also well described—operation work, especially, being in large part illustrated as to their progressive steps. The book, while thoroughly systematic in its arrangement in sequence contains a number of odds and ends of useful every day advice for the general practitioner; although it is especially to the specialist that its great excellence appeals. The Publishers have added good judgment in the plan of publication. This is a practical, useful book.

Editorial.

Medical Society of Virginia.

The 39th Annual Session of this body will convene at Hotel Jefferson, Richmond, Va., October 20, and will probably be in session through the 23rd. As this date is only a little over four months off, it is full time that those intending to present papers should be preparing them. "Anesthesia and Anesthetics" is the subject for general discussion, and the leaders have been appointed. It is earnestly requested that members will forward titles of their papers promptly, so that they may be properly classified. The official program is to be issued about "five weeks in advance of the session," that is, about September 15th. Those authors who delay longer in sending in the titles of their papers will have to submit to their presentation after all the other papers have been systematically presented.

This 39th session will be the beginning of a new era with the Society under its radically changed Constitution and By-Laws. The Executive Council will have practical charge of all business matters—thus leaving the Society free for the reading and discussion of scientific papers. It is expected that much more time will then be saved to the general sessions. It is an experimental year with the Constitution and By-Laws, which differ in many respects from those

of any other State Society. The recommendations of the Executive Council must have the endorsement of the Society in session before they become laws or resolutions.

This Executive Council is to consist of one member from each of the ten Congressional Districts of the State. Six of the districts have chosen their Councillors, and others will do so before the session; the full list will be duly announced as soon as nominated. In addition, five from the State at large are to be chosen by the Society in session; and presumably, in order that they will be in office from the beginning, these will be chosen during the meeting of the first night of the session. Hence the importance of a goodly attendance then.

It is not improbable that some frictional points may be recognized in the working of the new order of things. One complaint that has come to us by correspondence is that membership of the Executive Council prevents the friends of any member thereof from nominating him as an officer of the Society. It is argued that such a course may prevent some of the more prominent members of the Society who have never had its high power allowing their names to be offered as candidates for the Executive Council. Observation of results as to the coming session will have to be made on this point.

There can be no doubt as to the proper selection of the President for the present term. Dr. Wm. F. Drewry, of Petersburg, has been indefatigable in his work for the Society. And if even a degree of his energy and zeal has been imbibed by members throughout the State, there can be no question as to the grand success of the approaching session.

Dr. Walton's Electro-Therapeutic and Hydro-Therapeutic Hospital.

The Charlotte Medical Journal for May, 1908, contains a notice of the new Richmond enterprise, undertaken by Dr. J. C. Walton, formerly of Mecklenburg Sanitarium, for the treatment of chronic and nervous diseases. His offices and baths are in the fire-proof annex of Murphy's Hotel, in which new building are ample accommodations for boarding patients. Graduate masseurs, nurses, etc., are provided. The Richter Company has installed a complete outfit for hydro-therapeutic treatment, and the entirely new and complete electro-therapeutic

apparatus, consisting of static machines, X-ray outfit, electric light baths, etc., have been specially built for his hospital. During the past year, Dr. Walton has taken special courses in some of the great centres to perfect himself in the most approved and up-to-date methods of diagnosis and treatment. His long experience in the treatment of chronic affections, specially qualify him for the work he has chosen. Dr. Walton had won an enviable reputation in his native State, North Carolina, before his removal to Virginia. He was a member of the North Carolina State Medical Association and is an earnest, active member of the Medical Society of Virginia.

Medical Examining Board of Virginia.

This State Board will hold its first semi-annual session for this year in the University College of Medicine, corner Clay and 12th streets, [Richmond, Va., June 23-26, 1908. The Secretary, Dr. R. S. Martin, of Stuart, Va., will begin registration of applicants for examination at 10 A. M., Tuesday, June 23rd. That night a meeting of the Board itself will be held for transactions of business. Examinations of applicants for license to practice in Virginia will begin at 9 A. M., Wednesday, June 24th. To each subject, three hours are allowed; and examinations on three subjects a day for three consecutive days are held. Dinner hour, from 3 to 4 P. M.; supper hour, from 7 to 8 P. M. Promptness as to the hours for being in the hall is required.

Hygeia Sanatorium, Richmond, Va.

Dr. J. W. Long, Greensboro, N. C., formerly Professor of Gynecological Surgery, etc., in Medical College of Virginia, recently paid a visit to Richmond, and in a communication to the *Charlotte Medical Journal*, makes special mention of the Hygeia Sanatorium, under the charge of Dr. J. Allison Hodges, as an institution doing excellent work. It has a capacity for sixty patients, and has a liberal patronage from the North and South, as well as Virginia and the surrounding States. It is an institution for medical and nervous disease cases, and is thoroughly equipped for diagnosis and treatment. It is a pleasure to note such commendatory mention of Richmond hospitals in journals of other States.

Surry County, Va., Medical Society.

At a meeting of the Surry County Medical

Society, held at Runnymede, Va., April 2, 1908, the following officers were elected for the ensuing year:—*President*, Dr. J. W. Baird, Carsley, Va.; *Vice-President*, Dr. S. B. Barham, Runnymede, Va.; *Treasurer*, Dr. C. W. Astrop, Surry, Va.; *Secretary*, Dr. W. W. Seward, Surry, Va. Regular meetings, on the first Thursday in January, April, July and October.

New Member of Medical Examining Board of Virginia.

Due to the resignation of membership from this Board, of Dr. Herbert M. Nash, Norfolk, Va., a meeting of the Executive Committee of the Medical Society of Virginia was held at Richmond, Va., May 28th, and nominated Dr. Herbert Old, of Norfolk, Va., to fill out the unexpired term of Dr. Nash—through December, 1909. The nomination has been duly forwarded to the Governor of Virginia, for his commission, in the usual form. Dr. Old is expected to begin his duties as an examiner when the board meets in this city, June 23, 1908.

Medical Era's Gastro-Internal Edition.

The Medical Era, St. Louis, Mo., will issue its annual series of Gastro-intestinal editions during July and August. In these two issues will be published between forty and fifty original papers of the largest practical worth, covering every phase of diseases of the Gastro-intestinal canal. Sample copies will be supplied readers of this Journal.

Dr. Tunis C. Quick, Fall's Church, Va.

Has been chosen a member of the Executive Council of the Medical Society of Virginia from the Eighth Congressional District.

Obituary Record.

Dr. George P. Dillard

Died at his home in Henry county, Va., May 6, 1908, aged 79 years. He graduated in medicine from the University of Virginia, after which he took a course in Philadelphia. He married a North Carolina lady, and for some years practiced medicine in that State. Then he returned to his former home near Figsboro, Va., where he continued in practice until a short while before his death. He is spoken of as an exemplary physician.

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Original Communications.

PSYCHOTHERAPY.*

By PRESLEY C. HUNT, M. D., Washington, D. C.
Neurologist to Providence Hospital, etc., Washington, D. C.

The child comes into the world with only such qualities as the parents have given him. We may bemoan the laws of heredity, but it is futile to revolt against a situation that is a fact. It is an imperative duty to correct vicious tendencies by education, to awaken moral feelings, to train the reason.

Morality exists independent and free from all theologic ties. It becomes instinctive and automatic and constitutes what we call moral conscience. Whether a man be guided by his own strength or by the teachings of a personal philosophy, or whether he lean on the staff of religion, he has his downfalls.

In order to change the state of mind of any one who has fallen, you must sympathize, enter into his mental life and gain his full confidence; then moral authority, and the gentle persuasion will accomplish a mental change.

The task of the physician is to ascertain the abnormal mentality, to find out its moral or physical causes and remove them. Unfortunately, physicians have not seen with sufficient clearness that they are often called upon to treat the morale of their patients, to correct their faults, rather than their physical condition, in order to give them a more rational mentality.

Sadness is often the result of a fatigued condition. Repose would, therefore, be the physical remedy—it may be sufficient..

The same state of mind may result from moral troubles; you then have to call to your aid the support which your sympathy for the patient gives you and carry out psychotherapy.

*Read at a meeting of the Medical Society of Georgetown University, March 14, 1908.

Our mentality depends upon our brain, and there is structural deterioration in all mental diseases although it may elude our methods of investigation.

Persuasion by logical methods is most powerful when it has to do with the psychoses of lesser degree, called neurasthenia, hysteria, psychasthenia, etc. It is an easy method to employ; it produces quick and lasting effects.

In order to proceed with method one must analyze the symptoms, go back to their origin, distinguish those which are physical and recognize the mental character of others.

Nervous patients are suggestible, susceptible to fatigue, sensitive and emotional. There is an exaggeration of normal reactions.

Suggestibility is that faculty of the mind which permits any one to be persuaded, by no matter what process, of the existence of a fact, of the justice of an idea, or of the excellence of a determination.

The only way to cure a patient is to rapidly suppress the psychic disorder, and to give the feeling which alone can create power, namely, the conviction of power. Beware of unhealthy auto-suggestions; it is by a word, or a gesture, or an attitude that you give rise to these reactions. A nervous patient is not cured if he retains his mental fears; if he is on the outlook to avoid influences which he wrongly considers hurtful.

We preserve our mentality throughout life, but can greatly modify it by education. If we can suppress the mental emotion of worry in physical and intellectual fatigue by clear and reasonable convictions, we cure our patient. No one has ideal health or mentality.

The nervous patient who consults us may take comfort; he is not as far from us as he thinks. Meet him half way; acknowledge to him our weaknesses and defects. Recognize his

good qualities and show them to him. Prove that his mental weakness is only comparative—Then he will pick up courage.

The chief defect of the neurasthenic is to tire mentally, physically, and morally. The neurasthenic is easily discouraged, he has no confidence in himself; he lacks the power of adaptability; he is mentally unstable. It is the trifling vexations and the daily annoyances that he cannot bear.

In hysteria auto-suggestibility is the chief defect. The hysterical patient is an actress on the stage, but she does not know she is acting, but believes in the reality of the situations. It is, therefore, amenable to a purely psychotherapeutic treatment.

In psychasthenia, patients suffer from sensations of incompleteness, from disturbance of the feeling of reality (dream state), inability to withstand the misfortunes of life.

Psychotherapy resolves itself into:

1st. The cure of the existing trouble.

2nd. The prevention of its recurrence in the future.

The nervous patient is on the path to recovery as soon as he believes he is going to be cured. He is cured on the day when he believes himself cured.

It is necessary to implant in the mind of the patient the fixed idea of cure, no matter what means are used, as religious faith, suggestions, suggestions by use of medicine, physical means, and last but not least education of the reason.

True religious faith imbues patients with moral strength so that they know how to suffer joyfully. The suggestible condition is normal.

Everybody is hypnotizable and suggestible just as long as he does not oppose the influence.

All nervousness denotes a mental defect or a lack of logic and you must modify and help this weakness by education.

In psychic treatment it is the first consultation on which in great part the final success depends. The patient should feel that the physician is a friend who is going to cure him.

There are no symptoms without importance. Believe in the reality of his pains; and little by little in friendly conversation we can prove them of mental origin. Study the mentality of

your patient; detect his lack of logic, his exaggerated susceptibility, and in conversations modify his natural mentality. In many cases, the Weir Mitchell treatment of rest in bed, isolation, and overfeeding, if modified to suit the case, is of great importance.

The physician should never appear in a hurry, the patient should feel that he is the only person in whom the physician is interested. Let your patient talk, question him about his childhood, his diseases, worries, hopes and fears. The study of the mental peculiarities of the patient ought to be made at the beginning of the treatment. Inform yourself of his environment and the circumstances which have given birth to his nervous condition. Gain as complete history of the case as possible before seeing your patient.

The three cardinal symptoms of nervousness are dyspepsia, constipation and insomnia.

The dyspeptic in a large per cent. of cases is depressed, and this condition is suppressed by moral means. It is best to put him on a milk diet for six days, studying the case during the interval, and changing to full diet on the seventh day.

Constipation is cured by appealing to a man's reason, and having a fixed hour to answer nature's call.

Insomnia is cured by removal as far as possible of the worries and cares that the patient takes to bed, and imbued with the faith that he will sleep.

The secret to psychotherapy is to explain with patience and gentleness the symptoms to our patient and make him understand things; to have the patient surrounded by those who understand the nature of the treatment, and will co-operate with the physician in securing a cure.

The method of treatment described above has been carried out by me during the past three years in private practice and in the wards of Providence Hospital with good results.

The nervous patient, seeking advice, at hospital after hospital, and met by the exclamation "you are nervous, control yourself," like a drowning man ready to seize at a straw, and prepared to welcome any treatment suggested, is indeed a worthy object of sympathetic care.

It will fully repay you for the time and care spent on these cases to watch their growing faith in your efforts, and finally when cure has resulted, their gratitude and thanks are at times pathetic.

I hope, in the near future we may have a hospital especially devoted to this rapidly increasing class of nervous patients.

1815 M. Street, N. W.

THE NATURE AND TREATMENT OF FEVER.*

By WILLIAM S. GORDON, M. D., Richmond, Va.

Professor of Practice of Medicine, University College of Medicine.

The exact nature of fever is not understood, while its proximate causes and the laws by which it is governed are imperfectly known. The subject is studied, therefore, as electricity is studied, largely by the manifestations of the unknown. On the other hand, a good deal is known concerning the cause, the course, the effects, and the treatment of the various maladies characterized in part by elevation of temperature. A discussion of febrile diseases, however, is not implied in the title of this paper, and I shall confine myself to a necessarily limited consideration of fever in general and of the principles underlying its management.

Fever is defined, in simple terms, as an elevation of temperature above the normal. It is a disorder of bodily heat. One of the main factors in its production is an increased tissue metabolism affecting chiefly the glandular and muscular systems. In one sense, accordingly, the transient rise of temperature resulting from excessive physical or mental exertion, is fever, since the abnormal heat is directly attributable to increased metabolism. The high temperature stated to have been observed in cases of hysteria and presumably due to immediate excitation of the heat centers, may be called febrile. Whatever be the exciting causes, whether those above mentioned, or external heat, or the internal action of organic or inorganic toxins and drugs or infections, the elevation of temperature brought about by such means constitutes fever. It is fever of pronounced type due to toxins or microbes, in which we are most interested.

Other sources of excess of heat are transmission from circulatory activity, and excessive combustion, with increased excretion of CO_2 and increased consumption of oxygen. Landois says that the respiratory quotient is unaffected. Another fact stated by the same author is that the combustion and oxidation processes are enhanced when the febrile animal is placed in a warm atmosphere. The same truths hold for a cool atmosphere, but the changes are greater in warm air. The excretion of uric acid, urea, urine pigment and potash is markedly increased. Sugar oxidation is increased.

Additional phenomena of fever are the disturbance of the heat-regulating mechanism and the lessened excretion, or dissipation, of heat; while, as accessory phenomena, may be mentioned compensatory increase in the force and frequency of the heart beats and respirations, impairment of the gastro-intestinal functions, disturbances of cerebration, secretion and muscular activity, and retarded excretion. In high continued fever, tissue degeneration, especially fatty metamorphosis is common. In acute fevers the red blood cells diminish, and the white increase in number. The amount of saliva is usually diminished. Attention may again be called to the fact that, in fever, heat production and dissipation are both increased, but the former more than the latter; hence the temperature rises. In certain kinds of fever the rise is mainly due to diminished heat dissipation.

Proofs of the foregoing statements, however interesting and satisfactory, are purposely omitted. It is sufficient that the teachings of physiology with regard to the production and regulation of animal heat be recalled. The part which food, especially the carbohydrates, plays is of the first importance. The starving animal loses, and up to a certain point the over-fed animal gains heat; and while the influence of other causes should not be minimized, sufficient stress must be laid upon the excessive metabolism, the exaggerated activities and the waste brought about by the various agents concerned in the production of these phenomena. A small gum boil may give rise to a high fever, but the precise behavior of the microbe after it enters the circulation, and its action upon the tissue

*Read before the Richmond Academy of Medicine and Surgery, April 28, 1908.

cells is a mystery. What can be asserted is that the microbes and other organic or inorganic agencies are responsible for excessive metabolism and increased heat production as a primary effect, and that the secondary effects are to some extent, the results of the primary.

The effects of fever are noteworthy and have justly claimed the serious attention of the pathologist and the clinician. Elevation of temperature is not always an unmitigated evil; for, in a moderate degree, it may exert a stimulating and beneficial influence. Every physician has observed the physical weakness of which patients complain when, after a prolonged period of pyrexia, the temperature becomes normal or subnormal. Indeed, the reaction may be dangerous. Conversely, we have observed the quickening of cerebral activities by the heated blood, the excitation of the cardiac and respiratory centers especially being to the patient's advantage. I can recall an illustration of this truth in one of my classmates at college, who, during a brief attack of fever, requested me to quiz him on anatomy. He surprised himself at the accuracy and rapidity with which he gave out what he was afraid had never been taken in, and remarked that with a similar spell, he would have no dread of the impending examination. Many of the most brilliant products of the human intellect have been partly the result of fever. Hood, Kirke White, Stevenson, Sidney Lanier and many others did some of their best work under the stimulating influence of the fever of tuberculosis. The surgeons tell us that they prefer a hot to a cold patient after an operation. To a certain extent, therefore, the increased vascular tension and rapidity of the blood current are salutary, while even the drowsiness and quietude often noticed, particularly in febrile children, may be the good blown by an ill wind.

As a rule, however, the effects of fever are not to be regarded with complacency. We must bear in mind the liability of certain children to convulsions when the temperature rises to a certain point; the wakefulness or stupor which frequently assume the gravest phases; the possibility of fatty degenerations that jeopardize the patient's life; and the many discomforts entailed upon the sufferer; nor should it be for-

gotten that elevation of temperature maintained even for a short period above a given point means death. It is well that knowledge comes, even if wisdom lingers, as Tennyson says, and it is better for us and for those whom we attend that we understand the dangers of fever, and no longer withhold the simplest and most available antipyretics which the well-meaning but unenlightened practitioners of the past denied.

Although moderate and even high fever, when transient, may at times be disregarded without injury to the patient, yet it behooves the physician to use every reasonable means to control excessive or long continued pyrexia. The appropriate treatment of fever and its accompaniments bring into play the highest resources of therapeutic knowledge and skill, and the doctor who possesses these qualifications illustrates the best type of the medical practitioner. Fever in itself must be treated whether its cause be known or not, and the adaptation to individual cases, of the means to the end requires an application not only of technical knowledge, but also of practical and common sense methods without which the physician labors in vain.

Recalling or summing up what has been previously stated, that fever is produced by external and internal agents; that increased metabolism and combustion result; that the heat-regulating center is disturbed; that heat-dissipation is lessened; and that several of these factors are usually operative at the same time, we can address ourselves to the treatment of fever in the confidence that our efforts will be, in a great measure, rewarded with success. In the first place the active causative agent must be searched for and removed. Frequently this can be accomplished, as, for instance, by purgation in gastro-intestinal toxemia or by the use of such remedies as quinine and diphtheria antitoxin, which destroys the offending organisms. In many cases it is impossible to ascertain the nature of the microbes, or to antagonize them when known; hence it becomes necessary to direct our efforts against the phenomena, the effects, and the results of fever.

Of paramount importance is the reduction to a minimum of the tax upon the physical and mental functions, and this is obtained by abso-

lute rest, as far as possible, of body and mind. In this manner metabolism is materially lessened.

In the second place the avenues of heat-excretion and dissipation should be kept well opened. The skin should receive special attention; the kidneys and bowels be acted upon as occasion requires; and an abundance of pure air be supplied to the lungs. The external and internal use of water is extremely valuable, and it is necessary only to mention the usefulness of hydrotherapy, without entering into the details of its application. In this connection I cannot refrain from quoting the opening lines of a poem which I read when a boy and which made a lasting impression upon my memory.

"A cup of water, Nora
What! do you call this cool?
'Tis like what they used to give us
In Summer days at school."

The words were put into the mouth of a fever patient who, in his delirium, was raving about a waltz of Weber played by the musicians across the way, but who resented, probably in a lucid interval, a draught of warm water offered to him on a summer night. Thanks to the progress of medical art we now understand the grateful and benign effects of an abundance of pure cold water when the hot, dry skin, the scant excretions, and the parched tongue and lips of the burning patient demand the remedy.

Supplementary to the use of water, sudorifics can be employed with marked benefit. Spirits of nitrous ether, solution of ammonium acetate, the neutral mixture, ipecac, alcohol and other drugs acting upon the sweat centers or glands meet the indications for physiological reducers of fever.

Again, heat-production must be lessened and the heat-regulating centers controlled. Knowing little about the centers, we are quite limited in our means for their control; but bearing in mind that the function of the centers is more disturbed in a warm than in a cool temperature, we can place the patient in a comparatively cool room. Drugs which diminish heat production by influencing tissue changes and oxidation are true antipyretics; to which class belong quinine, salicylic acid, some of the salicylates, digitalis, veratrin, hydrochlorate of kairin, and antipyrin and its related coal-tar products.

These drugs have their place, but ought to be carefully administered. Especial caution, in my opinion, should be exercised in the use of the coal-tar derivatives. In the early stages of high fever, when the pulse is strong and bounding and the skin dry, their prompt and beneficial effects cannot be doubted, but used continuously, when the temperature is comparatively low, the pulse frequent, and the heart muscle in danger they are capable of doing irreparable damage. The discriminating judgment of the physician will decide the question as to which to use and how long to continue them.

In prolonged fever the heart and general circulation should be closely watched, sedatives being required at one time, and stimulants at another, while the effect of excessive heat upon the brain and cord should be prevented by appropriate measures.

The last point which I wish to mention is the subject of feeding, a full consideration of which might well consume a whole evening of discussion. All of us know what was said of the celebrated physician, Dr. Graves, that he fed fevers; and the reply of the wag, that fevers fed graves. The proverb, also, comes up afresh, "Stuff a cold and starve a fever." The choice between these two procedures is hardly doubtful. Fevers must be fed. The waste must have its compensation. The patient must not starve on his own tissues. It is bad practice to overfeed and to poison with the fermenting products of what a dry and enfeebled gastro-intestinal tract cannot digest; but it is equally bad practice to endeavor to atone for the waste by a scant allowance of albumin and so-called meat-extracts. Exclusive proteid food produces acetone, which is a very undesirable narcotic in the blood. Moreover, all of the proximate principles are as essential to the welfare of the sick as they are to the welfare of the healthy individual. I am firmly convinced that the emaciation, the anemia, and the tardy convalescence of many fever patients are caused by underfeeding and imperfect nutrition. Liquid or semi-solid food must be supplied of proper quality, in proper quantities, and at proper intervals. It must be suited to idiosyncrasies and to the digestive capacity. At times it must be predigested, or else digestives—especially hy-

drochloric acid—should be given at the same time. The condition of the evacuations and the urine, and the general appearance and strength of the patient will furnish reliable evidences of the suitability of the diet, while the error of discarding what is beneficial or depending upon what is harmful will be avoided. I have heard a physician express his opposition to the use of milk in typhoid fever because it produces flatulence. Another remarked that milk was his main reliance. No such hard and fast rules for feeding can be laid down, for the wise doctor is he who knows how to adapt the food to the requirements of the case in hand.

In conclusion, allow me to repeat that the main purpose of this paper is to provoke the discussion of a very wide and interesting subject by calling attention to some of its fundamental principles. Sufficient has been mentioned to emphasize the complex nature and the seriousness of fever the therapeutic knowledge and skill required for its appropriate treatment, and the importance of expending upon its study a good portion of our time and the best of our intellectual efforts. Knowing more than our predecessors knew, we may entertain a reasonable amount of satisfaction or, perhaps, pride; knowing less than our successors will know, we should constantly exhibit a greater amount of dissatisfaction and humility.

THE VALUE OF MORPHINE DERIVATIVES IN OCULAR THERAPEUTICS.*

By WEBSTER FOX, A. M., M. D., Philadelphia, Pa.

Some of the newer salts of morphine, but whose efficiency or improvement over the older and more stable preparations has not been proven, are anisate, benzoate, borate, phthalate and tartrate, saccharinated, stearate, heroin—an acetic ester of morphine—and ethyl-morphine hydrochlorate (dionin). This latter derivative is the only one which has proven of value in ophthalmic practice.

Dionin has proved to be a valuable drug in ophthalmic practice. From the time that Dr. Wolfberg, of Breslau, drew the attention of the profession to its use in the treatment of eye diseases, many other investigators have tested

it in a large number and several kinds of cases. Darier, of Paris, was enthusiastic as to its value, and many articles upon its use by other ophthalmic surgeons have been published.

Ethyl-morphine hydrochlorate (generally known as dionin) is a derivative of morphine, having the chemical formula $C_{10}, H_{23}, NO_3, HCl + H_{20}$. It is supplied as a white, odorless, bitter powder, soluble in about seven parts of water. It is an advantage that its aqueous solution keeps unchanged for a considerable time. In ophthalmic practice it has been used in the powder form, in aqueous solutions of from 1 to 10 per cent., as an ointment, or in rods of cocoa butter of the same strength.

When applied to the eye, dionin produces a smarting sensation, and even a slight pain at first, followed by sneezing in many cases. There is more or less vascular injection and chemosis of the conjunctiva, with an increased flow of tears. Dionin has no effect on the pupil, the accommodation, or intra-ocular pressure. In one patient, however, I noticed that after needling for soft cataract and making an application of dionin, the pupil became contracted, although full atropine mydriasis existed before its application. The pupil again dilated after the chemosis of the conjunctiva disappeared.

When the drug is for the first time used, in 5 per cent. or 10 per cent. solution, the rapidly induced chemosis is most alarming to witness, but a study of its action, has shown that it is only produced by the stronger solutions. With the weaker (1 to 2 per cent.) there is no chemosis and but little smarting is produced. Darier, however, claimed that the more intense the reaction, the greater is the benefit produced. Dionin is an analgesic and its action sets in within a few minutes after it is applied to the eye, but is not anesthetic, the sensibility of the cornea remaining unchanged by its use. In this it differs from cocaine and holocain, both of which are anesthetics, as well as analgesics, but cocaine and holocain are inferior to dionin in analgesic effect.

Many ophthalmologists in France, Germany, Russia, and the United States have experimented with dionin since Darier so persistently forced its claim upon the notice of the profession, and it has been tested in a great variety of cases, such as acute conjunctivitis, trachoma, blepharitis, scleritis, pannus, parenchymatous

*Read during the Ninth Annual Meeting of the American Therapeutic Society, Philadelphia, May 8, 1908.

and phlyctenular keratitis, ulceration of the cornea, corneal opacities, iritis, vitreous opacities, retinal detachment, choroiditis, glaucoma, and secondary cataract.

The majority of writers agree in stating that dionin has a distinct influence in relieving pain, especially when connected with corneal or uveal affections. It also shows a marked influence in clearing corneal opacities, which action is attributed to its lymphagogic effect, and it has been claimed that it is distinctly useful in iritis and retinal detachment.

Reports of its action in the hands of different investigators have somewhat varied, and it may not be uninteresting to furnish yet another report of the results from its use as observed in the Ophthalmic Department of the Medico-Chirurgical Hospital in Philadelphia, and also in my private practice.

The value of this drug lies in the mode of its application. My experience, in many cases, proves that with the sub-conjunctival injections of a 2 per cent. solution, I have frequently found the cornea rapidly become clearer, and then, with the addition of mercurial intinctions get perfectly well. My assistant, Dr. Brophy, has applied this derivative of morphine in the shape of an ointment to a great variety of chronic corneal opacities, and opacities following granular lids. If any clarification of the opacities occurred it came very slowly. In fact, we have come to the conclusion that this method of treatment of long standing opacities has little, if any, therapeutic value.

In the treatment of acute ulcerations dionin has much value, especially in the marginal ulcers of old people. I can record case after case of this form of ulcer, and several dendritic ulcers in which other forms of treatment seemed to fail, and prompt healthy reaction and complete recovery were established by the dionin treatment.

In retinal detachment I have, as yet, failed to see any benefit from this drug alone, whether applied locally or by sub-conjunctival injection. My practice, in these cases, is to make a sclerotic incision and drain off the sub-retinal fluid. I keep the patient in bed for a week, resting quietly, then make a sub-conjunctival injection of dionin to assist in clarifying the cloudy vitreous. By this surgical and therapeutic combination I have had surprising results in twenty

per cent. of my cases. When one recalls the former methods of treatment and the disappointing results, this is, to say the least, encouraging.

My experience leads me to believe that for vitreous opacities from any inflammatory cause a combination of sodium saccharate and dionin gives better results than either of these drugs afford when used alone. I make these sub-conjunctival injections three times weekly; the quantity being from ten to twenty minims.

After giving this derivative a thorough trial in many ocular diseases, in none is its action more strikingly shown than in painful iritis. By the use of the 5 per cent. solution, pain will cease within two hours, and more rapid relief will be obtained by sub-conjunctival injections than when that drug is applied to the eyeball.

My experience has not led me to advise the use of dionin in acute glaucoma. In several of such cases it neither afforded relief from pain, nor a lessening of the tension, and an operation became the only resource.

In the short time allowed for a paper of this character no one can do full justice to his subject. I shall, therefore, have to present a brief summary of my experience which has extended over several years.

1. Ethyl-morphine hydrochlorate may be used in a solution of from 1 to 10 per cent., or in an ointment or powder form. It is an analgesic and not a local anesthetic.

2. It is most valuable when combined with atropine in painful acute iritis, and irido-cyclitis, and it assists in breaking synechiae and relieving pain.

3. It is of some value in recent corneal opacities, but its value is doubtful in old opacities.

4. It is of some benefit in recent vitreous opacities, but its use is doubtful in chronic hyalitis.

5. It is doubtful whether it is of use in detachment of the retina.

6. I have made repeated applications in secondary capsular cataracts, but have noticed no exceptionally rapid clarification of the pupillary space.

7. It affords no special aid in the absorption of the lens matter in a soft cataract after needling.

8. It is not necessary, as a rule, to confine the patient in bed during the treatment.

9. The reaction is violent after the first three injections, but it subsides in about an hour's time.

This is my summary of the use of dionin in ophthalmic practice. In regard to the results experienced in the use of the other derivatives of morphine I am not yet ready to report.

1804 Walnut Street.

INTRACRANIAL COMPLICATIONS OF OTITIC AND NASAL ORIGIN.*

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The subject assigned me for to-night is of such magnitude that even a brief review of the literature would consume more time than is allotted for the reading of the paper; therefore, I have only attempted to draw attention to the symptoms which are of most importance in the diagnosis of these conditions, and hope that discussion will throw some new light on the matter.

A glance at the anatomical relations of the frontal and sphenoidal sinuses and ethmoidal cells to the brain shows them separated from the dura by a bony wall which is often not thicker than 1-48 inch. The middle ear, also has but a thin wall between its epitympanic recess and the cerebral covering; the internal ear has the ductus endolymphaticus in direct contact with the dura, and there is free anastomosis of both the mastoid and tympanic veins with those in the cranial cavity.

Intracranial complications of otitic origin are of so much more frequent occurrence than those with nasal cause that our principal attention will be directed to them.

Nasal intracranial complications usually occur in chronic purulent conditions of the sinuses where the mucous membrane has undergone polypoid degeneration, or the bony wall is eroded and while in some cases, there may have been a cessation of the suppurative process, yet the hiatus in the wall will be found.

Various observers have differed widely in their statistics as to whether intracranial complications are more frequent in acute or chronic purulent disease of the ear; but that both are a menace to the integrity of the cranial contents

is beyond dispute, and this fact is sufficient for our present purpose.

Brain abscess and meningitis are the usual complications of nasal origin. The meningitis has a symptomatology similar to that of otitic origin; abscess is usually in the frontal lobe and presents no localizing symptoms unless situated about the base of the third frontal or ascending frontal convolution. The pupil of the same is usually dilated if the abscess is large; but with a small abscess the pupil may be contracted and sluggish.

Intracranial complications of otitic origin are, in the order of their frequency, extradural abscess or localized external pachymeningitis, meningitis, sinus thrombosis and brain abscess.

Extradural abscess is very difficult to diagnose with certainty prior to operation; but our suspicions should be aroused in a case of mastoid or middle-ear abscess with rapid alternation in the appearance and disappearance of symptoms. Especially is this true if symptoms of inflammation and meningeal irritation are relieved by a sudden discharge of a large quantity of pus from the ear. An otorrhea whose flow is out of all proportion to the size of the middle ear should lead us to suspect an epidural abscess. Where a mastoid abscess has been operated on and threatening symptoms, such as meningeal irritation, fever and intense pain over the entire temporal bone without evidence of brain pressure, persist, they are most probably due to epidural abscess.

Subdural abscess or localized internal pachymeningitis will occur, provided there is a perforation of the dura and adhesions between the dura and pia to wall off the purulent collection; such an abscess leads to local softening of the brain or brain abscess. It differs in symptomatology but little from leptomeningitis.

The symptomatology of leptomeningitis is wide in its range. Headache is the most common and earliest symptom, often being recurrent in the beginning of the disease to become chronic and excruciating later. Patients who are comatose often grasp the head with both hands. Convulsions and muscular twitchings are prominent, and delirium is frequently seen; the patient may start from his coma with a peculiar, characteristic cry. This symptom is common in children, and has long been called the hydrocephalic cry.

*Read before the Richmond Academy of Medicine and Surgery, May 10, 1908

The pulse is rapid in the beginning, to become slower as cerebral pressure develops as a result of accumulation of fluid, and again becomes rapid as the case progresses, at the same time being irregular and smaller. The temperature varies from 101 degrees to 106 degrees F. If a careful chart of pulse and temperature is kept, valuable diagnostic aid may be gotten from its study.

The respirations are increased in the beginning of the trouble; later, become intermittent and sometimes Cheyne-Stokes. Vomiting without nausea, especially upon assuming the erect posture is common. Vertigo is not unusual. Contraction of the muscles of the neck is a classical symptom not often absent. We may also find scaphoid retraction of the abdomen. Localized convulsions or muscular rigidity are of not infrequent occurrence. Reflexes are, in the beginning, increased; but decrease toward the end may be entirely lost. Kernig's sign may be of value, but is not always present.

Constipation is almost invariably present, the evacuations becoming involuntary toward the end. Emaciation is rapid and out of all proportion to the duration of the illness, due probably to pressure upon and interference with trophic centers. Urine is small in quantity and frequently contains albumen. Optic neuritis may develop as a symptom but is unreliable.

Lumbar puncture may afford valuable diagnostic aid both by demonstrating the presence of infective bacteria and albumen, it having been claimed that the presence of more than 1 per cent. of albumen is pathognomonic of meningitis.

Serous meningitis presents nearly all the early symptoms of the foregoing, but will usually rapidly clear up if the focus of irritation is removed, though it may end in death if the abscess is not drained.

In lateral sinus thrombosis, the most valuable symptom is undoubtedly the temperature. Rapid changes in the curve occur: A sudden rise to 105 degrees or 106 degrees followed by an equally rapid fall to normal or subnormal. Such fluctuation may occur only once in twenty-four hours, but cases are frequently found where several such changes are noted during that period. Chill may or may not precede the rise in temperature; but where actual

chill is absent, a careful observation will usually elicit the information that chilly sensations are present. Sweat may follow the fever. The pulse and respiration fluctuate to correspond to the temperature.

Pain is usually present in greater degree than in uncomplicated mastoiditis, and is referred to the side of the head upon which the disease occurs and to the occipital region. If there has been early involvement of the jugular vein, pain and stiffness of the neck will be present, though the cord-like impression made on the finger examining in front of the sternomastoid muscle is by no means so frequent as the majority of text-books would have us believe.

Nausea followed by vomiting will usually occur at some time during the course of the disease, brought on most frequently by moving the head. The vomiting is slight in amount and may occur independently of the ingestion of fluids or solids. Cerebration is normal except in the late stages of the disease. Patients may be apathetic, but when aroused, answer questions intelligently. The tongue is dry and coated; spleen enlarged; facies anxious; skin dry with appearance of the yellow, septic hue if the condition persists. Diarrhea, which is colliquative in character, is the rule. Optic neuritis may be present, but is not usually an early symptom. Edema over the mastoid process, sometimes spreading to the temporal region, while not always present, is of great diagnostic importance when found.

Epistaxis, swelling of the veins from the anterior fontanelles to the temple, thrombosis of the retinal vessels and epileptiform attacks are, according to Politzer, the symptoms which characterize the spread of the thrombosis into the inferior and superior or petrosal sinuses.

If the cavernous sinus becomes involved by the extension of the thrombi we will have photophobia, edema of the eyelids, disturbance of vision, engorgement of the orbital vessels, paralysis of the third, fourth and sixth cranial nerves, neuralgia of the fifth, exophthalmos and ptosis, which will be followed by sloughing of the orbital tissues.

Brain abscesses of otitic origin are either in the temporal lobe or the hemisphere of the cerebellum of the side upon which the diseased ear is found except in those rare cases where

the opposite side becomes infected by pyemic metastasis

In these cases we have fever, usually paroxysmal and not running very high—101 to 102 degrees F.,—though the temperature is frequently subnormal; pulse slow, 50 to 60 or lower and not increasing with rise of temperature. Respiration generally regular; the cerebellar abscess is likely to have either extremely slow or Cheyne-Stokes respiration. Broca considers persistent increase in temperature on the affected side of the head as characteristic. Headache, localized in the parietal region in cerebral abscess, and in the occipital in abscess of the cerebellum, is sometimes found. Localized tenderness on percussion in the corresponding parietal and temporal regions is found, but does not give accurate indication of the location of the abscess. Cases of cerebellar abscess with hyperesthesia of the scalp have been reported. Dizziness, vomiting usually without nausea, slow cerebration, loss of memory, apathy and somnolence are found.

Optic neuritis, if present at all, is of late occurrence; typical choked disc is more characteristic of cerebellar than of cerebral abscess. Subsidence and recurrence of the above symptoms is of peculiar significance in diagnosis. Sudden vertigo and falling down in a semi-conscious condition would indicate cerebellar abscess. Kernig's sign has been found, but is not usual. Constipation is the rule. Localizing signs are more often absent than present.

The blood count will afford us most valuable information in our diagnosis: A high polynuclear percentage—eighty-five or over—indicating that the suppurating process has passed beyond the bony confines of the temporal bone; and if, in addition, we make a careful examination of the cerebrospinal fluid by means of lumbar puncture, the presence or absence of bacteria may lead us to a conclusion in what would otherwise be a most obscure case. Radiography has been as yet too little used to afford any definite idea of its scope in diagnosis of brain abscess, but its usefulness in outlining pus in the nasal accessory sinuses leads us to hope much from its aid here.

Two or more of the conditions whose symptoms I have outlined, may co-exist, rendering diagnosis still more difficult, and often the smallest point may give us light. A most care-

ful history of the case kept by a competent observer is imperative, with pulse and temperature charted every two hours.

Many of the complications arise because of delayed operation; and early incision of the membrana tympani when it is bulging and painful will prevent regrets as the trouble progresses. The mastoid operation should be done promptly when inflammation in this region does not yield quickly to incision of the membrana tympani and drainage of the middle ear with other appropriate, general and local measures. In this way we may open a few mastoids that would have gotten well without operations, but we will prevent a far greater number of serious complications than we can hope to do by pursuing an expectant plan. In these cases radicalism in advising operation is usually in the end, the most conservative course.

I have already informally reported to this body the following case, but shall append it to this paper:

Mr. W., aged 34; family history negative. He is of rather neurotic tendency, the other members of his family being phlegmatic. Had usual diseases of childhood; otherwise, always well. Has a vague idea that he had an abscess in one of his ears in childhood, but is not sure about it. Typhoid fever two years ago, which was not severe in type nor marked by any complications that were noted, but his convalescence was extremely protracted.

I saw him first, February 6, 1907, and found him suffering with a well-marked mastoiditis and acute inflammation of the middle ear—membrana tympani bulging and ruptured. An immediate incision of the membrana tympani was done and free discharge of pus resulted. Appropriate treatment for mastoiditis was ordered. After thirty-six hours, his improvement was not marked, and a mastoid operation was advised and accepted; but a delay insisted on as he thought he was improving. He went to the hospital for operation about two weeks later, but felt so much better after getting there that he again decided to defer it, and got well enough to go to his office and direct the discharge of some of his business. He did not, however, improve in his general condition, and slight tenderness over his mastoid persisted with free discharge from the external auditory meatus.

On April 4th, I removed his entire mastoid process, finding the antrum filled with pus, and pus and granulation tissue filling the cells. There was no sinus leading into the cranial cavity. Convalescence was uneventful, and he was walking around the hospital in eight days, the wound granulating nicely in all parts.

On April 15th, I was summoned by one of the internes at 8:30 A. M. He said that Mr. W. had just been found in bed unconscious with stertorous breathing. Arriving at the hospital, his condition was found as above, with temperature 106 degrees and pulse about 60. He could not be aroused. He was at once ordered to the operating room and the mastoid wound carefully examined and found healthy in all parts. With rongeur forceps, a portion of the squamous plate about two inches in diameter, was removed; the dura brought into view in this way was deeply congested with entire absence of pulsation, and felt of almost board-like hardness. Upon making a crucial incision into the presenting dura, the brain bulged into the opening. I entered my knife for the purpose of exploring the temporosphenoidal lobe, and had just passed beneath the cortex when a gush of thin, milky fluid, perfectly odorless, came, followed by the spontaneous delivery from the wound of the collapsed abscess capsule. The capsule when full was as large as a moderate sized hen-egg, and there was a necrotic spot, three-quarter inch in diameter, on its lower part. Its wall varied in thickness, but was on an average, about one-quarter inch. Microscopical examination showed it to be of well-organized fibrous tissue with spindle cells present.

The patient died in six hours without regaining consciousness. In reviewing the case, I can find no symptom of brain pressure at any time before the last day, except a slight amount of photophobia which he complained of several times. The ocular fundi were not examined. I am of the opinion that the condition came from an otitis media during his childhood or in the course of the attack of typhoid fever two years previous; and that the present illness and operation caused an interference with the circulation which resulted in the necrosis with subsequent symptoms.

PUERPERAL ECLAMPSIA.*

By JOHN E. WALSH, M. D., Washington, D. C.

Of the many diseases and accidents which may affect a case of pregnancy, one of the most embarrassing and alarming is the occurrence of eclampsia. Usually it comes when least expected, for, although the patient may have some prodromal symptoms, as a rule, she says nothing about them, presuming her discomfort, such as headache, pain in the epigastrium, etc., to be a part of the pregnant condition.

Fortunately the disease is not very common, varying according to the reports of different observers from one in 300 to one in 500 pregnancies. During 18 years of general practice, I have had only two cases, both occurring post-partum, I am glad to say, and both recovered.

The condition seems to be much more frequent in primiparæ than in multiparæ; 77 per cent. of the cases reported by Winchel, and 85.4 per cent. reported by Löhlein were pregnant for the first time. As to the period at which the attacks may come—while they more commonly occur in the latter months—they may come on at any time, even during the first 30 days of pregnancy. The mortality among the cases occurring previous to the seventh month is higher than among those occurring after that time. G. H. Ryder¹ reported 27 cases of eclampsia, of which 13 died, giving a mortality rate of 35 per cent. Twenty-five of his patients were over 7 months pregnant, the mortality among them being 25 per cent., while of the twelve cases pregnant seven months and under 58 per cent. died.

The rate of mortality is affected by the period at which the eclamptic attack comes on, the mortality of the ante-partum being highest, intra-partum the next higher, and those occurring post partum having the lowest rate, about 8 per cent. In Ryder's cases the ante-partum rate was 41.6 per cent., the intra-partum cases, 33 per cent., and the post-partum 14.3 per cent. The mortality rate given by other observers varies considerably. Esch² gives the death rate among 496 women treated at Olshausen's clinic at 21.4 per cent. Hecker gives it as 27 per cent; Dohren 29 per cent.;

*Read at meeting of the Medical and Surgical Society of District of Columbia, March 15, 1908.

Hugenberger 25.1 per cent and Löhlein 37.7 per cent. As to the children, about 50 per cent. succumb.

The prognosis is influenced, aside from the period at which the convulsion comes on, by their frequency and severity; by the profoundness of the coma; by the continuance of the rise in temperature; by the condition of the patient as regards organic disease of the heart, lungs, or kidney; and by the rapidity with which the uterus can be emptied. The number of convulsions an eclamptic patient may have vary from one to a hundred or more. F. Engelmann³ reports a very interesting case in which a primipara had 200 convulsions and recovered.

Many theories have been advanced as to the cause of eclampsia, all of which have their adherents, but as far as our present knowledge extends, there is no one cause to which all cases can be ascribed. The causes which have been most generally accepted are: first, that it is due to disturbance of the functions of the kidney, either by the occurrence of a nephritis, retention of the urine, by a pressure on the ureters, or by deficient elimination of urea and the other nitrogenous end products; second, that it is due to toxins in the blood; third, that it is due to bacterial infection; and fourth, that it is of chemical origin. Lever in 1842 asserted that eclampsia was due to albuminuria. This theory that the kidneys were responsible, or that through faulty metabolism, some of the nitrogenous end products are not eliminated and by their toxic effects on the nerve centers produce the convulsive seizure was the commonly accepted one, but I think in the light of later observations and experiments, this theory is not tenable.

Dr. P. K. Brown⁴ has contributed a very interesting paper in which he tries to show the relation of the kidneys to eclampsia. As a result of his experiments and investigations, he draws the the following conclusions:

1. "Albumen is present in fully 80 per cent. of normal pregnancies."
2. "Albumen and casts are found in at least 30 per cent. of all pregnancies"
3. "There is no reason to suppose that the

normal condition thus revealed is the cause of eclampsia."

4. "That there is some connection, however, between the albuminuria and the extra-renal cause of the eclampsia is likely in view of the nearly constant association of the two."

5. "It has been shown that neither any normal end product nor any known intermediary product of metabolism is the cause of eclampsia."

Levniovitsch⁵ described a bacterium which he claimed was the cause of eclampsia. He found large oval and round cocci in each of 24 cases of eclampsia. These organisms were found in the blood and when injected into guinea pigs caused hemorrhagic endometritis and in rabbits occasioned tetanic spasms.

Zweifel⁶ found crystals of zinc paralactate in the urine of eclamptic women. He states that lactic acid is a constant constituent of the urine in eclampsia, derived probably from the meat ingested and he considers it responsible for the eclampsia. He also found lactic acid in the blood as well as in the urine, its presence indicating a morbid condition. In one eclamptic woman a large amount of lactic acid was found during the attacks, but five hours after the last convulsion there was no trace of it. He also found lactic acid in the blood of the fetus. Inasmuch as lactic acid is a product of deficient oxidation, he thinks the trouble is due to an excessive consumption of oxygen by the demands of the growing fetus and that the main indication for treatment is to supply oxygen. His later researches⁷ confirmed his previous conclusions as to the importance of zinc paralactate in the urine as the expression of deficient oxidation, but he had not obtained much good from the use of the inhalation of oxygen in such cases.

Lochemann also found zinc paralactate in the blood of eclamptics.

Leipmann⁸ ascribes eclampsia to retention in the liver of toxins generated in the placenta. In the examination of 67 placentæ from eclamptic women he found evidence of a toxin which is not encountered in a normal placenta. He claimed it must be identical with the eclampsia toxin as the more of the toxin

that was found in the placenta, the less serious the maternal eclampsia, while when there is little of the toxin in the placenta, a larger amount is circulated in the maternal blood. This toxin, which the liver for some reason, is unable to neutralize, passes into the circulation and in the case of a predisposition affects the brain, kidneys or both and induces the attack of eclampsia.

Weichart⁹ succeeded in isolating a blood coagulating substance from toxin isolated from the placenta of eclamptic women, besides the element in the toxin which causes the arrest of the respiration. By segregating these substances, he was able to produce an immunizing serum which he claims checked the development of the symptoms after injection of the toxin.

One of the most interesting contributions on the subject of eclampsia is that of Vaquez¹⁰ which, while it does not explain or shed any light on the primary cause of the condition, shows the importance of arterial hypertension in producing the attacks. The lesions in the liver or kidneys which are sometimes found in cases of eclampsia, instead of being a cause, are the result of the same etiological factor which produces the hypertension. He says, while the origin of the hypertensive vascular spasms, which are the essence of the eclampsia, is still a mystery, the most plausible hypothesis ascribes it to some disturbance in the vascular glands thyroids, suprarenals, or chromophile glands which regulate the arterial pressure and which have such an important influence on the generative sphere of women.

He has been studying the arterial pressure in cases of eclampsia for the past ten years and has always found it much higher than normal. When the sphygmomanometer revealed a great increase in the arterial tension, the convulsions were not long delayed in making their appearance. The hypertension he found did not depend on the convulsions but preceded them. While some observers as Quirel and Reynaud claim that hypertension exists throughout pregnancy, others such as Vaquez, Millet, Goldwater, Cook, and Briggs have never found it above normal in a physiological pregnancy until labor has actually begun. There is always

a rise of blood pressure during labor, returning to normal on its completion.

Vaquez affirms positively that eclamptic convulsions will never be encountered with normal arterial tension, while they may be apprehended whenever the arterial tension is found unusually and persistently high.

Among the signs of hypertension are the accentuation of the second aortic sound and dilatation of the arch of the aorta. Dilatation of the left ventricle may also be disclosed on percussion, and hypertrophy of the left ventricle is often found in the autopsies on cases which have died of eclampsia. When these conditions are found they indicate that the hypertension has existed for a long time, and consequently indicate that the high tension has long preceded the eclampsia. Vaquez says there is no other affection accompanied by such high blood pressure as eclampsia and there is no other which is so habitually characterized by hemorrhagic phenomena. He thinks the hemorrhagic foci which have been supposed to be due to toxic or infectious processes to be much better explained by this high pressure. He believes that nothing but mechanical conditions will explain the sudden onset of the kidney disturbances in eclampsia, their intensity and the rapid return to normal. He reports one case in which the urine contains .5 grams of albumen on the first day, 62 grams the second, 37 grams the third, and 2 grams the fourth day, with a corresponding increase and decrease in the proportion of acetone and bile pigments and normal conditions by the fourth day.

Janeway also speaks of the importance of the sphygmomanometer in the detection and treatment of eclampsia. He says that hypertension is invariable in all cases so far observed and that the existence of high pressure during pregnancy is a warning of its possible occurrence which seems of more value than the finding of albuminuria. He states that after delivery, if the pressure does not fall, eclampsia must be considered imminent. In all the cases studied by Cook and Biggs the postpartum hypertension was invariably followed by convulsions.

Having in mind what has been said about hypertension in the eclamptic condition I am

now of the opinion that the use of the sphygmomanometer as a routine practice during the pregnancy period and especially immediately before and after labor will be of much greater value in the recognition of an impending eclampsia than the determination of the amount of albumen or urea in the urine. It is a matter of common knowledge that albumin and a deficient excretion of urea is found in the urine of a large number of cases of pregnancy, none of which have any symptoms of eclampsia but have had perfectly normal labors. In a series of a hundred cases of pregnancy observed by Dr. Little at Johns Hopkins Hospital, albumin was found in 40 per cent., and albumin and casts in 14 per cent. None of these cases developed eclampsia. Zweifel mentions the occurrence of eclampsia in patients who had no preceding albuminuria.

It is very rarely that eclampsia comes on without some premonitory symptoms. They may be so slight as to pass almost unnoticed, or they may be very severe. The most constant symptoms are the intense headache, more or less discomfort referable to the eyes, and pain in the epigastrium. The headache is almost always frontal, sometimes lateral, but very seldom in the occipital region. Sometimes there is some mental disorder. Disturbance of the vision is very common, varying from a slight blurring of the vision to almost total blindness. The epigastric pain, when present, is very intense. It is not constant but occurs at intervals. Among the premonitory symptoms observed in 496 women who suffered from eclampsia at the Berlin gynecologic clinic from 1900 to 1905, the epigastric pain was present in 102 cases; headache in 178, edema in 143, amblyopia in 4, and transient amaurosis in 17.

In the actual attack the convulsions of eclampsia do not seem any different from those produced by uremic poisoning. There is a curious difference however in the temperature curve of the two conditions. In uremia, at first there is a fall in the temperature, while in eclampsia it rises and drops to normal abruptly with the cessation of the attack. In uremia the decline is gradual. This difference is more marked in cases which go to a fatal

termination—the temperature in the uremic condition falling below normal while in eclampsia it rises and may reach a very high figure. 109° F.

The indications in the treatment are prophylactic, to control the convulsions, to eliminate the toxins, and to empty the uterus at once with as little danger to the mother and child as possible. In the prophylaxis, if the urinary examination is the sole guide as to treatment, whenever albumin is present the patient should be put upon a milk diet, the bowels should be moved freely, and if the urine is scanty diuretics should be given. Patients should take an abundant supply of water, breathe pure air, and take moderate exercise. The activity of the skin should be promoted. The proper function of the liver should also be seen to. If the kidneys are deficient in action citrate of potassium in 20 grain doses three times a day will be efficient. The skin can be kept in a good condition by the patient taking a tepid bath every day. If the sphygmomanometer is used as a routine practice on the appearance of continued hypertension, in addition to the measures mentioned, drugs are to be given which will reduce the blood pressure. The best vaso-dilator for this purpose is probably sodium nitrite.

In the actual attack the convulsions should be controlled and in certain cases the uterus emptied. To control the convulsions many drugs have been recommended. Morphia is a remedy highly regarded by some. Zweifel regards this as best adapted for cases when there is a long interval between paroxysms. Dr. Clark, of Oswego, recommends giving the eclamptic patient hypodermically a grain and a half at a dose and repeating after two hours if another paroxysm occurs. Chloroform is probably the best remedy to use during the occurrence of convulsions, but to prevent them a rectal injection of 30 or 40 grains of chloral hydrate should be given. Veratrum viride has been much lauded in the treatment of this disease but I have had no experience with it. It has been recommended by different ones to give a full dose and repeat at intervals of about three quarters of an hour until the pulse rate is reduced to about 60 per minute; the intervals should then be made longer and the dose

smaller, but enough being given to keep down the blood pressure. Other drugs which have been recommended are hyoscine, muriate of pilocarpine, nitroglycerine, and caffeine. With the idea of eliminating the toxin, venesection and the intravenous injection of a normal salt solution has been practiced. The patient should be freely purged by the use of some cathartic, and sweating promoted by the use of the hot pack or hot air apparatus. Copious injections of normal salt solution into the rectum have been recommended.

Rapid delivery of the child is, I think, indicated in all cases of eclampsia occurring after the seventh month of pregnancy unless a lowering of the blood pressure can be readily accomplished. The mortality among those treated by active interference is so much lower than among those subjected to expectant treatment that I think there can be very little doubt regarding this. In Olshausen's clinic the convulsions did not recur in 75 per cent. after delivery. The mortality among the artificially delivered women was only 16.8 per cent., while among those delivered naturally 20.8 per cent. died. Zweifel reported a mortality of 32.6 per cent. with expectant treatment and 15 per cent. where active measures had been used. The longer period which elapses between the first convulsion and the delivery of the child the greater the danger to the mother. In Ryder's cases the mortality among those delivered twelve hours or longer after the first convulsion was 60 per cent. In those delivered in less than twelve hours it was 30 per cent.

In the two cases I am about to report there is nothing unusual to distinguish them from other cases of postpartum eclampsia. They only show that while the usual procedure as regards the examination of urine was taken to determine the danger of impending eclampsia yet the convulsions did occur when they were least expected.

The first was Mrs. C., white, aet. 26, multipara, with second child, family history good. First puerperium and labor normal. During the pregnancy with the second child nothing unusual was noticed. The bowels moved regularly every day and the urine examined at monthly intervals during the early part and

semi-monthly toward the last contained no albumin and showed a normal excretion of urea. The last specimen was examined two weeks preceding the birth of the child. There was no edema at any time. The labor which came on about two weeks ahead of the expected time was normal, of about six hours duration, the child being born dead. There was not much amniotic fluid but considerable loss of blood. The patient seemed perfectly well for 24 hours, when without warning she was taken with convulsions and during the following 20 hours had about eight paroxysms. A catheterized specimen of the urine taken during the interval between convulsions coagulated almost solid on boiling. To control the convulsions nitroglycerine 1-100 of a grain and morphia 1-2 grain was given hypodermically and the action of the skin promoted by the hot pack. The patient made an uninterrupted recovery.

Owing to the constipating effect of the morphia great difficulty was experienced in getting the patient's bowels to move. Compound jalap powder, and sulphate of magnesia were given and high rectal injections administered without effect for two days.

Case two, Mrs. R., white aet. 25, multipara; with second child, family history good; first pregnancy and labor normal. During this pregnancy the urine was examined monthly and semi-monthly and was normal both as regards albumin and urea. She suffered considerably with constipation and one or two attacks of obstructive disease of the bile duct. The labor, which came on two weeks after the expected time, was normal, a male living child being born. There was considerable amniotic fluid and a normal amount of blood lost. About 22 hours afterwards she was taken with the convulsions and during the next twelve hours had six. Her temperature was normal up to eight hours before the first convulsion. It was normal in the interval between the first two convulsions, but taken about five minutes before one of the paroxysms there was a rise to 102.5°. Preceding and during labor and afterwards she voided urine naturally and apparently in normal quantity. A catheterized specimen taken after the last convulsion about seven o'clock in the evening contained a very large

amount of albumin but the proportion of urea was about normal. Frequent examinations of the urine were afterwards made and the albumin persisted in decreasing quantities until it had entirely disappeared at the end of a month. The urea eliminated varied from 14 to 22 grams in the 24 hours.

In this case chloroform was used to control the convulsions, the hot pack used to promote sweating, and the bowels freely purged by the use of compound jalap powder.

In this paper I have not gone into the subject as deeply as its importance would demand nor have I advanced any new or original ideas. My principal object is to impress upon the members of the Society the importance of the blood pressure in this condition and to urge them to use the sphygmomanometer as a routine practice just as often as they examine or should examine the urine.

1. *American Journal of Obstetrics*, May, 1906.
2. *Zeitschrift f. geb. u. gyn.*, Stuttgart, v. lviii, No. 1.
3. *Cent. f. gyn.*, Leipsie, v. xxxi, No. 11.
4. *Journal American Medical Association*, v. xli, No. 2.
5. *Cent. f. gyn.*, No. 46, 1899.
6. *Archiv f. gyn.*, Berlin, lxxvi, No. 3.
7. *Muench. Med. Woch.* v. lili, No. 7.
8. *Muench. Med. Woch.* v. lxii, No. 51. and *Cent. f. gyn.*, Leipsie, v. xxx, No. 24.
9. *Deut. Med. Woch.*, Berlin and Leipsie, v. xxii, No. 46.
10. *Semaine Medicale*, Paris, v. xxvii, No. 11.

TREATMENT OF PLACENTA PREVIA.*

By MARTIN D. DELANEY, M. D., Alexandria, Va.

In these days when so much is written regarding one of the most serious complications arising during pregnancy, one is liable to become confused and wonder what form of treatment is really most appropriate. It is more for the sake of discussion rather than writing an essay that I present this paper for your consideration to-day.

One almost holds his breath when ushered into his patient's bed-room and finds her lying in an immense pool of blood. On making a vaginal examination, the physician realizes for the first time that he is dealing with so serious a complication as placenta previa. He must act quickly or he will lose the mother, and the foetus will die in utero. The mortality rate of the child is very high, ranging from 40 per cent. to 60 per cent.

There are four varieties of this most dreaded condition, viz: Central, partial, marginal and lateral implantation. In the central and partial varieties the hemorrhage begins early in pregnancy and is, as a rule, frequently repeated and during labor these varieties are more dangerous than the hemorrhage occurring in the other two varieties—marginal and lateral.

The central variety of placenta previa offers many obstacles during delivery, first by preventing the descent of the child, and secondly, by preventing the efforts of the physician in reaching the child to extract it.

It is very seldom that serious consequences occur before the seventh month, and if we, as obstetricians, were only consulted when the first symptoms develop, when the hemorrhage is usually slight, perhaps we would be better able to ward off any serious consequences to the mother or child.

A great many women do not attach much importance to these slight hemorrhages; accordingly we meet the patient when she is almost exsanguinated, and as a result we receive nothing but the most unjust criticism from the laity for our management of the case.

If this condition is recognized in the early part of pregnancy, and as we know that more serious consequences are liable to develop between the seventh month and full term, the safest treatment is to terminate gestation at the end of the seventh month.

The child is then viable and has just as good, if not a better chance to survive than to leave it in a uterus that is bleeding continuously from the site where the placenta is attached, and has practically no chance of living long, even if born alive.

The mother from the constant loss of blood during this period, will be almost exsanguinated, and have a protracted convalescence, with a possible chance of losing her own life—if not during delivery, from post partum hemorrhage which often follows this condition.

Owing to these circumstances I think it better to take chances with a possible safe delivery of a premature living child and a much more healthy mother, than a full term dead child, and a mother in a very weakened condition of both mind and body.

We must not lose sight of the fact that patients who have lost so much blood are more

*Read before the joint meeting of the Medical Societies of Northern Virginia and Fairfax County, Va., May 15, 1908.

liable to infection than those who have not. We all know that there are times when we are not surrounded by everything that is aseptic, no matter how much we may strive to have complete asepsis.

When the time arrives to bring on labor, in cases where we have been consulted early, an assistant should be on hand to administer an anesthetic. The patient should be placed in the lithotomy position, the legs supported by nurses, attendants or leg holders. The parts should be shaved and made thoroughly aseptic, as well as the hands of the operator and his assistants.

The operator should begin by dilating the cervix, by first inserting one finger, then a second, then the thumb of the right hand; he should then search on the left side for the edge of the placenta, pass two fingers beyond it, perform bi-polar version, assisted by the left hand externally; rupture the membranes seize a foot and bring it down. During these manipulations the hemorrhage is often very profuse, but just as soon as the breech becomes firmly impacted the hemorrhage will usually cease.

Traction may be practiced on the presenting leg from time to time in order to hasten the dilatation of the cervix, but plenty of time must be allowed in order not to produce any tears, because these parts are more or less friable and lacerations are apt to produce considerable bleeding.

The circular muscular fibres of the cervix are liable to contract around the child's head, and the child liable to become asphyxiated from pressure on the cord.

When the breech is firmly impacted as stated, we are not liable to have any hemorrhage, and it is safe to wait for an hour or two when we have good dilatation, and the child may be extracted safely without much difficulty. Instruments of any kind at this time, are liable to cause all kinds of trouble; they are apt to produce deep tears and so defeat our purpose of delivery with little hemorrhage.

If we discover a case of placenta previa during labor for the first time, the proper course to pursue, after cleansing the parts thoroughly, is to pack the vagina tightly with sterile gauze, which has been soaked in some antiseptic solution.

If after one or two hours the hemorrhage

continues, and makes its appearance through the gauze, it should be withdrawn, and the patient anesthetized by an assistant.

When under anesthesia, it is possible to sweep the finger around the edge of the placenta and separate it from the uterus. Some advise tearing through the center of the placenta, but it is far better to go to the side, and this can be done with a little patience. The patient will bleed more by tearing through the centre of the placenta than by detaching one side from the uterus. After the separation, perform bi-polar version as before—rupture the sac and deliver the child.

The vast majority of cases of placenta previa are of the marginal and lateral variety. The proper course to pursue in these cases is to pack the vagina tightly with sterile gauze, as in the other two varieties, withdrawn the gauze in one or two hours, and if the cervix is sufficiently dilated, rupture the sac and allow the presenting part to press on the bleeding surface.

It does not matter in the marginal and lateral varieties, whether the presenting part is the vertex or the breech; just as soon as the presenting part becomes impacted the hemorrhage will cease.

If the vertex is presenting, just as soon as the cervix is sufficiently dilated apply forceps and deliver. If it be the breech, bring down a foot and make traction from time to time until able to deliver.

The introduction of Voorhees' bag, when the process is slow or there is considerable hemorrhage, aids greatly, provided the membranes are intact and we have one at hand, which is not often the case with a physician who has so many things to carry, and is liable to be caught several miles in the country without any assistance whatever: hence he must use the fetus to produce the pressure, which other mechanical devices would supply if at hand.

The danger of post partum hemorrhage in these cases must not be overlooked. It happens more often after cases of placenta previa than any other class of cases. This is one class of cases where ergot is not contra-indicated during delivery. I know its physiological action, and the conditions that are liable to occur to the uterine muscles. In these cases it seems to produce a beneficial effect and gets the uterus under better control, if administered during

delivery, with less chance of post partum hemorrhage.

To illustrate this I will report the following cases:

Case 1. Mrs. K., age 38, para IV, after the seventh month had a profuse hemorrhage followed by others. I saw her in consultation. The physician watched her carefully, and kept the vagina packed tightly with gauze for several days. When dilatation commenced, and he was able to aid it by means of his fingers, he separated the edge of the placenta from the uterus and found the sac ruptured with a vertex presentation. He then began the administration of ergot every fifteen minutes and continued its administration until labor was terminated in about two and one-half hours, without any further hemorrhage. The child was delivered without instruments, but was dead. The mother made an excellent recovery.

Case II. Mrs. I., age 34 para III, stated that she did not know why she had been menstruating during the past three months, and that during the past few days she had been bleeding rather freely. When I saw her, she was having slight pains and bleeding profusely. I immediately packed her with sterile wet gauze and let it remain for an hour, when it was removed and the placenta pushed aside; the membranes had ruptured of their own accord; the head was presenting; so I administered ergot which increased the pains for a time. I only gave one drachm; the patient was anesthetized and forceps applied as soon as the cervix was sufficiently dilated. The child was delivered alive, the mother had rather a protracted convalescence.

The first case had several doses of ergot during delivery; the second only one; the first patient did not have post partum hemorrhage; the second almost bled to death after labor.

It is absolutely necessary to secure firm contraction of the uterus in these cases; hence it is better to begin the administration of the drug early and continue after delivery. The placenta in each of these cases was centrally implanted, and was pushed aside to enable the head to descend, and not tear through the center.

Case III. Mrs. B., age 29, para V, was taken with profuse hemorrhage; it was the marginal variety of placenta previa. The vagina was

packed tightly but did not control the hemorrhage; so the gauze was withdrawn and the membranes ruptured. As soon as the presenting part pressed on the bleeding surface the hemorrhage ceased, and labor terminated naturally with a living child.

At the present time a great many surgeons are advocating Cesarean section for placenta previa. If you are sure you are dealing with this complication of pregnancy, and you are reasonably sure there is no danger of sepsis, a Cesarean section might be advisable, provided it is performed by one with considerable surgical experience; but otherwise a section should not be thought of on account of the added danger to the mother, and the probability of the child not surviving after the operation, when a premature delivery offers just as good results as the more serious surgical operation.

911 Prince Street.

TREATMENT OF INGUINAL ADENITIS.

By R. T. McNAIR, M. D., Emporia, Va.

The object of this paper is especially to emphasize the value of the *abortive treatment*. Should one seek information on this subject from the books, the remedial agent recommended is tincture of iodine.

Adenitis of the inguinal glands above Poupart's ligament originates from some condition causing irritation of the lower portion of the abdominal walls or of the genitalia—the latter being the more common. Enlarged glands below Poupart's ligament are due usually to inflammation of a benign type of some portion of the lower extremity of the corresponding side. These latter glands are situated above the saphenous opening of the fascia lata, and lie some distance beneath the integument. As the cause of adenitis of these glands is not usually of a specific origin, suppuration less frequently occurs than when it affects the glands above Poupart's ligament.

Of first importance in the treatment of inguinal adenitis (as of other forms) is to seek out the cause and, as far as possible, remove it. When due to an open sore of any character, this should be promptly and thoroughly treated on aseptic lines, to check the source of infection. In the earliest stages of adenitis, there is only slight tenderness and induration, when ice

applications and rest will almost invariably abort the inflammation of the glands—especially if the causative sore is being properly and antiseptically treated. But as it is seldom that we see cases in this early stage, we can rarely make satisfactory resort to this treatment. A more advanced stage of congestion favors cell-destruction. When there is considerable enlargement, induration and marked sensitiveness, if several coatings with tincture of iodine have been used immediately over the gland—often causing peri-adenitis—we can usually recognize the condition spoken of.

For this stage, I generally paint the parts thickly with a preparation consisting of equal parts of ichthyol and glycerin, and over this apply a layer of gauze. Absorbent cotton, dipped in hot carbolic acid solution—about 1 to 40—is placed over this, to the thickness of two or three inches. Cover all with a snugly fitting spica bandage, and place the patient in bed, with the leg in a semi-flexed position to relieve pressure on the lymphatic channels. In addition, keep the patient on a light, easily digestible diet, avoid constipation, and give internally the most assimilable form of iodine—such as the syrup of hydriodic acid. After twenty-four hours, remove the dressings, and carefully note the condition. Generally then a prognosis can be made as to the improbability or probability of suppuration. If there is less severity in the cardinal symptoms, accompanied by a physiological softening, one may be reasonably sure of disappearance of the trouble, if treatment is continued three or four days longer.

In cases originally showing involvement of the peri-glandular structure, it is well to use an application, composed of mercurial ointment containing twenty grains of iodine to the ounce. This should be gently, but well rubbed in before reapplying the above described dressings.

Among other means of early treatment may be mentioned the injection into the gland substance of ten to fifteen minims of a three per cent. carbolic acid solution; or else a solution of carbolic acid, 10 parts; glycerin, 40 parts; and distilled water enough to make 100 parts. However, I have never used these injections,

mainly because, in complicated cases, I would not be sure when the hypodermic needle was in the gland proper; and also because of the apprehension of the occurrence of necrosis. If attempted it is almost needless to add that this procedure should be carried out on thoroughly aseptic principles, lest infection be carried in with the needle.

If the above measures fail to arrest the process, and suppuration appear, little else is to be attempted than to open the abscess thoroughly and drain. Scarcely any two cases act alike after being opened—this being due to the different stages of the process when opened, and also to the amount of contiguous tissues affected. It is not always easy to decide just when to open. As a rule, whenever sharp pains, darting or needle-like in character accompany pressure on the mass—even before fluctuation can be detected—pus is present. Of course, when there is much pus, its presence is manifested by the usual constitutional symptoms of chill, fever, sweat, etc. After opening such abscesses, dress and treat them as any other suppurative cavities. Should there be tardiness in the healing process, or should the formation of pus continue longer than reasonable, a lymphatic gland or vessel at the bottom of the cavity is involved. In such cases, pack with gauze moistened with a 10 per cent. solution of nitrate of silver. Two or three packings of this kind are usually sufficient to check the degenerative process. Powdered boric acid dusted into the cavity promotes granulation, and also gets rid of any accompanying odor.

Though I have not had such to occur, after the above mentioned abortive treatment, probably the gland may remain chronically enlarged after the disappearance of acute symptoms. For such a condition I should use massage with the mercurial ointment and iodine, above referred to, and give internally ascending doses of hydriodic acid. If the condition does not respond to treatment, and becomes a source of annoyance, enucleation should be performed.

Gastralgia.:—Papine in teaspoonful doses every two or three hours will promptly relieve the severe pain of gastralgia.

Book Notices.

Treatment of Internal Diseases. By Dr. NORBERT ORTNER, University of Vienna. Edited by NATHANIEL BOWDITCH POTTER, M. D., Visiting Physician to New York Hospital, etc. Translated by FREDERIC H. BARTLETT, M. D., from the Fourth German Edition. Philadelphia and London: J. B. Lippincott Company. 1908. Cloth, 8vo., 658 pages. \$5 net.

This a thoroughly *practitioner's* book, and every physician who consults its pages will find it useful in many times of need for advice. It is devoted entirely to treatment of disease—even prophylaxis being omitted. Therapeutics of nervous diseases are also omitted, as such treatment is falling more and more into the hands of the specialist. Hydrotherapy is given prominent consideration whenever resort to such measures seems called for. So as to make medication less a matter of memory, a brief account of the action of drugs entering into prescriptions are given. A number of interpolations are made by the Editor which add to the value of the book. There must long be a demand by physicians for this book, which is nicely issued and well indexed.

Practical Medicine Series. Under General Editorial Charge of GUSTAVUS P. HEAD, M. D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. **Volume I., General Medicine.** Edited by FRANK BILLINGS, M. S. M. D., Dean Rush Medical College, Chicago, and J. H. SALISBURY, A. M. M. D., Professor of Medicine, Chicago Clinical School. Series 1908. Chicago Year Book Publishers. Cloth 12mo., 408 pages. \$1.50. **Volume II., General Surgery.** Edited by John B. Murphy, A. M., M. D., LL. D., Professor of Surgery, Rush Medical College, Chicago. Series 1908. Chicago Year Book Publishers. Cloth, 12mo., 614 pages. \$2.

These are the first two volumes of *Practical Medicine Series* for 1908, which is to consist of ten volumes on different fields of medicine, the annual subscription price of which, taken collectively, is \$10, and is remarkably cheap. The volumes represent the advances made in the respective departments during the previous calendar year. We have had occasion many times to commend these *Series*, and judging what is to follow during 1908 by the two volumes now under notice, as well as volumes during previous years, the *Series* will serve as a most valuable supplement to the most recent of useful text books and systems. Whenever

essential, the pages are well illustrated, and the text is well prepared by specially selected authors, to which valuable foot notes are often added by the Editors. *Volume I.* is full of interest as noting whatever is new regarding diseases of the respiratory, the circulatory, and blood and blood-making organs; general infection, diseases of ductless glands and metabolic diseases, and diseases of the kidneys. *Volume II.* on surgery, after full notes on anesthetics, X-ray, radiotherapy, new instruments, operative technic, etc., reports on advances as to wound healing, tetanus, burns, tumors—benign and malignant—diseases of bloodvessels, nerves, fractures, diseases of the skull and brain, face and mouth, esophagus, neck, thyroid, mammae, lung, heart, abdominal surgery, diseases of the peritoneum and mesentery, stomach, intestines, rectum, vermiform appendix, hernia, diseases of the liver, gall bladder, pancreas, spleen, kidney, etc. Both volumes are fully indexed.

American Practice of Surgery. Editors: JOSEPH D. BRYANT, M. D., LL. D., and ALBERT H. BUCK, M. D., of New York city. Complete in eight volumes. Profusely illustrated. *Volume IV.* New York: William Wood & Co. 1908. Royal 8vo., 1010 pages. Extra muslin, \$7; Brown Leather, \$8; Extra Half Lavant Morocco, \$9.

In view of the large size and excellence of publication, this "complete system of the science and art of surgery by representative surgeons of the United States and Canada" is being issued as rapidly as practicable. In a little over a year, four volumes of 1,000 pages or more each, have been upon the market. Contributors to this fourth volume are Drs. Allen, Garland, Painter and Stone, of Boston; Fowler, Keyes, Stewart, and Whitman, of New York; Johnston, of Richmond; Mitchell, of Washington, D. C.; Nancrede, of Ann Arbor; Rixford, of San Francisco; Wm. L. and John S. Rodman, of Philadelphia; Starr, of Toronto; and Whitacre, of Cincinnati. The Volumes are made up of parts. Thus, Part XIII. on *Diseases and Injuries of Joints*, was begun in Volume III., and is ended in Volume IV. Part XIV. relating to *Operative Surgery* and Part XV. beginning with *Orthopedic Surgery* are considered in Volume IV., under notice. The completeness of the *System* may be

judged from the fact that, Dr. Johnston's article alone, on "On Preparation for an Operation, the Operation Itself, and the Care of the Patient during and immediately after the Operation" occupies 43 pages. Nearly 100 pages are given to "*Anesthetics*" and their administration. These are instanced simply to show the fullness of the work. In short, each part is monographic as to the subject in hand.

Another excellence of the *System* is that it represents most thoroughly *American Surgery*; for whatever may be said in praise of Europeans, it cannot be denied that the American Surgeons, as a class, lead the world as surgical practitioners. Reference to matters discussed or described in this volume is made easy by the 25 pages of double column index.

Nervous and Mental Diseases. By CHARLES S. POTTS, M. D., Professor of Neurology, Medico Chirurgical College of Philadelphia, etc. Second Edition, Revised and Enlarged. Illustrated with 153 Engravings and 9 Plates. Lea & Febiger, Philadelphia and New York. 1908. 12mo., 570 pages. Cloth.

This is one of the earlier publications of the new firm, Lea & Febiger, successors to Lea Brothers Co. The book itself is so thoroughly a revision of the first edition as to make it a new work—having about 100 more pages than the first. It is not intended as an exhaustive treatise, but as a book that presents the salient points in reference to the most advanced views on nervous and mental diseases; hence may be well accepted as a students' textbook, or for ready reference by the practitioner, which reference is greatly aided by the 36 double column pages of Index. The arrangement of the book is thoroughly systematic. For one not a specialist, it is an excellent guide book in matters of diagnosis. The sections on treatment are perhaps a little too synoptical in general to meet the wishes of doctors who seek special prescriptions—although the synoptical suggestions are all well advised.

Glimpses of Medical Europe. By RALPH L. THOMPSON, M. D., Professor of Pathology, St. Louis University School of Medicine. Illustrated from Photographs and Drawing by TOM JONES. Philadelphia and London: J. B. Lippincott Company. 1908. Cloth, 12mo., 236 pages. \$2 net.

Notes of travel are almost invariably interesting. This book is especially so, for it

reads as familiar table talk about things and incidents. It is not a book that is to be reviewed, but rather to be announced as published. Prospective medical visitors to Europe will find it full of guide book information, and every page is entertaining reading. Doctors who have not been to Europe will also find in the book mention of facts and things that, told in conversational style, leave their most lasting impression. While the table of contents is well arranged, there is the lack of an index.

Physiology for Beginners. By WALTER MOORE COLEMAN, A. B. With an Appendix on Nature Study. New York: Macmillan Company. 1908. Cloth, 12mo., 194 pages.

This book is so elementary, intended for underclasses in public schools, etc., as scarcely to call for more than an announcement in a medical journal. It seeks to popularize the study of preservation of health in the child—by impressing upon the child's mind the results of bad habits, etc., and the benefits of right modes of living.

Lessons in Hygienic Physiology. By WALTER MOORE COLEMAN, A. B. New Edition, Revised and Enlarged. New York: Macmillan Company. 1908. Cloth, 12mo., 276 pages.

This is a good hygienic-physiology for public school children—giving them a popular idea as to the skeleton, skin, muscle, circulation, respiration, the nervous system, the special senses, food and digestion, etc. Chapters are followed by questions. Many illustrations are introduced. A manikin of 8 full page plates gives a relatively clear idea of the relation of parts. Some common place notes on emergencies are added which would prove useful for pupils to recollect. The book teaches as much as could be expected of one for the purpose intended.

International Clinics—A Quarterly. Edited by W. T. LONGCOPE, M. D. Volume I., Eighteenth Series. 1908. Philadelphia and London: J. B. Lippincott Company. 1908. Cloth, 8vo., 309 pages.

This volume of *illustrated Clinical Lectures* and especially prepared original articles on medicine, surgery, treatment, etc., by leading medical writers throughout the world, has its usual attractions of variety and value. These *Clinics* represent practically all departments of Medicine, and contain very full synopses of the progress of Medicine during the year 1907, collated from journals, books, etc.

Editorial.

Virginia State Board of Health.

While we cannot approve the political measures adopted to secure the establishment of the State Board of Health, which goes into effect July 1, 1908, still the Board itself, under the new law, is a good thing, and we wish it abundant success. If the plans of the Chief Health Officer of the State, Dr. Ennion G. Williams of this city, are carried out, benefit to the people of Virginia will inevitably result. We wish it every success in its laudable undertakings.

A rumor has gained currency that the profession of Virginia is opposed to the new Board. Such a rumor is without foundation. It was unfortunate that the plea for its establishment was based upon the claim that if State license taxes on doctors were repealed, the State Board of Health could not have been established. Trickery of politicians alone is responsible for such an idea. The two questions were in no way antagonistic. Both the claims for a new Board of Health and for the Repeal of State license taxes on doctors were right and should have been passed by the recent Legislature. Now that the Board of Health has been established, new activities will be brought in to secure the Repeal Bill at the next Legislature. This latter measure is by no means a dead issue, but will be contended for even more vigorously *as a right*, before the next and succeeding Legislatures, if necessary, until it is secured.

On the assumption of duties by the new State Board of Health, Dr. Williams will, no doubt, issue circular letters setting forth its plans and proposed ways of accomplishment. We trust the profession will give the Board its cordial support. Knowing Dr. Williams as we do, we are not afraid that a domineering spirit will mark his course, but will so conduct his office as to show the reasons for his actions.

The University of Virginia.

During the June, 1908, Commencement exercises had the following men to graduate from the Medical Department as

Doctors of Medicine.

Frank Ellis Barr, of Starkville, Miss; Sam-

uel Brock McGeorge Dear, of Washington, Va.; Pedro Alcantara de Figanieri, of North East, Md.; John Adam Fleischer of Meadow Dale, Va.; John Pierpont Fletcher of Portage, Wis.; John Jones Goodwill, of Shamokin, Pa.; William Hall Goodwin, of Cynthiana, Ky.; John Peachy Jones, of Morrison, Va.; Halgazoon Kruger Kaprielian, of Cesarea, Turkey; Norman Powell Lake, of Rectortown, Va.; Henry Cabell Maddux, of Orange, Va.; William Garrison Marks, of Naylor, Va.; Edwin Brooks Maynard, of Portsmouth, Va.; Harry Moses, of Mount Vernon, Ga.; George Harrison Musgrave, of Drewrysville, Va.; Wilson Pendleton, of Portsmouth, Va.; Percy Augustus Perkins, of Collierville, Tenn.; Samuel Hewes Phillipps of Chester, Pa.; William Clark Sparks, of Charlottesville, Va.; John Dilworth Stroud, of Norfolk, Va.; Eugene Arthur Taylor, of Miller School, Va.; Thomas Valentine Williamson, of Mt. Jackson, Va.

Resolutions of Virginia State Board of Health About Dr. P. A. Irving.

We, the members of the State Board of Health of Virginia, which by Legislative Enactment goes out of existence on July 1st, 1908, desire before finally separating, to express our appreciation of the efficient and unselfish work of our Secretary and Executive Officer, Dr. Paulus A. Irving. No one, who has not been associated with him can appreciate the difficulties which have beset him, and the amount of time and labor, which he, often without remuneration and at best but poorly remunerated, has given to our State and profession.

Taking up the work of Executive Officer of the Board in 1893, he started on the task of educating the people of Virginia as to the needs and functions of a Board of Health, for this first Board was legally without power and without funds. Working without compensation, he began by trying to get a law passed under which some efficient work could be done, but the first Legislature, to which this matter was presented, was not educated enough to appreciate its necessity, and refused to pass the bill.

Undaunted by this failure he continued with the work for Sanitary Education, first of all appealing to the profession of the State, who were now awakening to the necessity of Public

Health Laws. Through the influence of the physicians the Legislature in 1896 passed a mutilated bill which, though inefficient, did carry an appropriation of \$2,000. This was nevertheless partly remedied by the physicians, who under the lead of the State Board of Health and more especially of Dr. Irving, voluntarily established county boards of health, which at this time were not required by law. At this period Dr. Irving likewise established the Bulletin, through which he could keep in touch with the local boards of health.

Things drifted in this way till 1899, when under the stimulation of smallpox, the Legislature passed a new law, legalizing the county boards of health, giving the State Board some power over them, and raising the appropriation to \$5,00 which the next Legislature reduced to \$4,000. The law of 1899 gave the State Board of Health pretty broad general powers, but did not give it an appropriation sufficient to properly do the work, as the salary of the Executive Officer was still much too small to support him, and he was consequently forced to get his living from private practice. That this law (gotten up in large part by Dr. Irving) is still considered efficient, is shown by the fact that no attempt was made during the last session of the Legislature to change the general provisions, under which the Board has acted, for the new law merely greatly increases the appropriation and puts the responsibility of its enforcement on the Executive Officer, rather than on the members of the Board.

Dr. Irving has always considered that the work of a State Board of Health should be largely educational, and has through the local boards of health and the Medical Society of Virginia tried to get the co-operation of the profession and through it of the people. In this direction he has done a great deal more work than is generally accredited him. Besides publishing the Bulletin, he has written an immense number of letters, has prepared many sanitary bills, the majority of which have died in the Legislature, and has recently tried to bring the local boards nearer the State Board by means of Conferences, which for the past two years have been held at the time of the meeting of the Medical Society of Virginia. That he has been partially successful is shown by the general awakening of the people of Vir-

ginia to the necessity of Sanitary Reforms, and also by the willingness of the Legislature to appropriate \$40,000 to the State Board of Health, when ten years ago it begrudged us \$2,000.

Finally we wish to testify to the unselfishness of the man, who feeling that the large appropriation, carried by the Baker bill, was for the interest of the people of the State, was unwilling to fight it, though he knew that it meant his retirement from the position, which kept alive through marasmus in its infancy and through an ill-nourished childhood, merely to have it taken from him when it had gained sufficient strength to do work, which would be a credit to the State of Virginia and a lasting benefit to the health of her people.

Signed: R. W. Martin, M. D.; Lewis E. Harvie, M. D.; Landon B. Edwards, M. D.; J. H. Neff, M. D.; W. W. Chaffin, M. D.; Charles R. Grandy, M. D.

Dr. Alfred L. Gray, Richmond, Va.

Long in charge of the X-ray departments of St. Luke's and the Virginia Hospitals, has established a thoroughly up-to-date 24 inch Scheidel-Western coil equipment at his private offices, which is adapted to radiographic work and all forms of X-ray therapy. He has also a portable machine, which, by being attached to any incandescent light socket, furnishes the X-ray at the bedside in any house having electricity in its immediate vicinity.

Class of Research Fellowship —George Washington University.

The graduating class of the Department of Medicine of the George Washington University, numbering 45, who received the degree of Doctor of Medicine at the commencement exercises June 3, 1908, has announced to the University authorities the establishment by the class of a research fellowship. This fellowship will be known as the "Class of '08 Fellowship" and will have an annual fund of not less than \$300.

Dr. Thomas J. Stanley, Bracket, Va.

Who was charged with having given a false certificate as to the health of the "Rev." Hargrave, and thus detaining trial, was discharged by the United States Circuit Court in this city,

as not guilty of false intention. As the rumor of his arrest has gained wide circulation, and as he is a member of the Medical Society of Virginia, we take pleasure in noting his acquittal.

The Southside Virginia Medical Association.

Held its twenty-first regular session at Emporia, Va., June 2, 1908. A large attendance of members from the Southside section of the State were present, besides many visiting doctors from Richmond and Norfolk. After the scientific session, the meeting closed with a "smoker" at the Virginia Hotel. The next session will be held at Courtland, Va., the first Tuesday in September.

Dr. William F. Drewry, Petersburg, Va.

Superintendent of the Central State Hospital of Virginia and President of the Medical Society of Virginia, was elected Vice President of the American Medico-Psychological Association during its session last month at Cincinnati, Ohio. This means, according to the established custom of the Association, that Dr. Drewry will be made President at the next annual session.

Messrs. Sharp & Dohme

Are entitled to an expression of sincere regret that the printer took an unwarrantable liberty in removing the letter "h" from their advertisement, which appears every other issue on the fourth cover page of this journal. Fortunately the products of Sharp & Dohme are too well established in professional favor for them to suffer by this one typographical error. We try to be careful about the prevention of such errors, but they will sometimes creep into "the best regulated families."

Dr. J. M. Shackelford, Martinsville, Va.

Was chosen as the member of the Executive Council of Medical Society of Virginia, during the called meeting of members of the said Society residing in the Fifth Congressional District, held at Hotel Burton, Danville, Va. June 10, 1908.

Sixth Congressional District Councillor.

During the regular semi-annual session of the South Piedmont Medical Society, at Lynch-

burg, Va. Tuesday, July 21, the members of the Medical Society of Virginia residing in that District will choose the member of the Executive Council for said Society.

The South Piedmont Medical Society

Will hold its semi-annual session at Lynchburg, Va., July 21. There will be an afternoon and a night session. The subject for general discussion will be "Artificial Feeding of Infants." Dr. Geo. A. Stover, of South Boston, leader. Dr. Geo. W. Cöcke of Danville, and W. M. Smiley, of Houston are to open the discussion. Dr. Wm. S. Gordon, Richmond, has been invited to read a paper on "Pernicious Anemia." Dr. S. H. Watts, University of Virginia, is also expected to be present. Among others who have promised papers are Drs. R. H. Fuller of Clover, Wm. L. Robinson and J. M. Robinson, of Danville, Geo. J. Tompkins, Lynchburg, and H. C. Beckett, Scottsburg.

Tenth Congressional District Councillor.

A meeting of the members of the Medical Society of Virginia, residing in the Tenth Congressional District, has been called to assemble at the County Building, Staunton, Va. at 2:30 P. M. for the purpose of nominating a member of the Executive Council of said Society from that District. Official notices of the meeting will be sent out early in July.

The Medical Examining Board of Virginia.

Has been in session at the University College of Medicine building in this city all of this week, but it is improbable that the report of results of the examination will be ready before September. It is stated that over 200 applicants are before the Board, but of this number a majority are taking merely a partial examination.

Dr. R. M. Slaughter, Theological Seminary, Va.

Treasurer of Medical Society of Virginia and a member of the Medical Examining Board of Virginia, who is taking a sea voyage to South America, has arrived at Rio Janeiro, already much improved in health. He is expected home some time early in August, and will then give active attention to the affairs of the Medical Society of Virginia.

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Original Communications.

TECHNIC OF OPERATION FOR NEOPLASMS OF THE NECK.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.,
Professor of Principles of Surgery, Medical College of
Virginia; Surgeon to Memorial Hospital.

The chief point to be borne in mind in removing neoplasms of the neck is the anatomy of the parts involved. It is practically impossible to do thorough or satisfactory work upon the neck without a full knowledge of the anatomy of this region. Pathological conditions, however, frequently alter the normal structures, and allowances for such variations must be made. The improvement in operative surgery of the neck has been due not so much to the advent of asepsis as to more accurate anatomical knowledge and a closer study of the pathology. Without asepsis, abdominal surgery is impossible; but this discovery has not so profoundly affected operations for neoplasms of the neck; for, in these cases, erysipelas or suppurative inflammation is not so fatal as in serous cavities, and, besides, inflammatory processes seem to have occasionally a positive inhibitory effect upon many malignant tumors. There are several cases of inoperable sarcoma on record that have been cured after an accidental infection with erysipelas, and the therapeutic use of Coley's toxins is well known.

Improvement in surgery of the neck within the past forty years has been largely due to the more accurate knowledge of the anatomy of large vessels of the neck. Before the epoch-making work of John A. Wyeth, of New York City, the anatomy of the carotid arteries was in a chaotic condition. In the prize essays of the American Medical Association for 1878, Dr. Wyeth demonstrated that the anatomy of the external carotid artery was quite definite, and

that when variations did occur they were in a regular order which permitted classification; and so, under these conditions, it was perfectly proper to ligate the external carotid when necessary to control bleeding in the neck. Formerly, it had been the universal teaching that the anatomy of the external carotid artery was so uncertain, and its branches so close together as to make it necessary to ligate the common carotid when bleeding in the head or neck occurred demanding other than local treatment. At the age at which cancer occurs, ligation of the common carotid is very much more dangerous than ligation of the external, owing to the likelihood of cerebral complications.

A great addition to the technic of surgery of the neck was the work of Crile, of Cleveland, who demonstrated both experimentally and clinically, that the common carotid artery could be closed with a specially constructed clamp, and if too much force is not used, could be kept closed for several hours without any deleterious effects upon the artery. This procedure practically cuts off all arterial bleeding to the operative field. Cording the extremities to accumulate blood as advocated by Dawbarn, and elevation of the head and trunk in a kind of reversed Trendelenberg position, as practiced by many surgeons, have also proved of great value. Bearing in mind, then, the anatomy of the blood vessels and the various methods for reducing hemorrhage to a minimum, our next greatest concern is the nerves. There are important nerves in the neck which should not be cut, and there are branches from the sympathetic or cervical plexus of comparative unimportance that are situated sometimes rather close to such important nerves as the phrenic, and may cause confusion in identification. The phrenic and the vagus should not be sacrificed if possible to avoid it. Though while dangerous, it is entirely compatible with life and with health to resect either the vagus or the phrenic, provided their fellows of the opposite

*Read before the Richmond Academy of Medicine and Surgery, May 26, 1908.

side are uninjured. Section of these nerves on both sides of the neck is necessarily fatal. The reflex cardio-inhibitory nervous impulses pass over the vagus and its branches. Many cases of sudden death during operations upon the neck have been unquestionably due to tugging on, or rough handling of, the vagus, which, being thus stimulated, sends sufficiently strong cardio-inhibitory impulses to stop the heart at once. Such a disaster can be guarded against by gentleness and care in dealing with this nerve or its branches, and also by the administration of atropine a short while before beginning the operation. I always give the patient a hypodermic of atropine before operations upon the neck. This drug acts by paralyzing the peripheral ends of the vagus distributed in the cardiac muscle, and so prevents stimulation from the vagus being received.

It is unnecessarily tedious to describe the technic of various neck operations for tumors; but a common and dangerous condition that often confronts us is the involvement of glands of the neck from cancer that has originated about the face or mouth. There are but few lymph glands about the face, and a cancer in this region is carried to the glands of the neck by lymphatic channels that merely act as common carriers, but do not—at least in the earlier stages—retain any of the cancer cells. It is not essential, then to remove the original neoplasm and the glands of the neck in one mass, as in cancer of the breast, where the malignant tissue is practically continuous from the primary focus to the axilla. If only a few glands are involved in the upper part of the neck, they can be removed by local dissection. This is illustrated in the case of Mr. C., whom I operated upon more than three years ago for a squamous-celled cancer involving the ala of the nose. Recurrence had appeared shortly after the application of a paste. There was one gland involved in the sub-maxillary region. The original focus was removed, and a flap-molding operation done to correct the defect; then the gland in the neck was dissected out. There has been no indication of return of trouble, though operation was performed in July, 1904. If, however, more than two or three glands are involved, this method is inapplicable as recurrence is almost invariably the rule.

The operation of Crile has given the best re-

sults in this class of cases. Its principle is sound, and is based upon the same principle as the modern operation for cancer of the breast; that is, the removal of all of the affected tissue in one mass. The operation is not so difficult of execution as would be supposed from the extensive dissection required. A transverse incision just through the skin is made parallel with the lower jaw and below it, and extending over the sternomastoid muscle. Another is made above the clavicle. These two are joined together by a long cut. As the glands are involved secondarily, the skin is healthy, and may be preserved; but where the skin is so adherent it should be removed, going well around the adherent area. After exposing the sternomastoid muscle at its origin and dissecting up the skin-flaps at the lower angle of the wound, the muscle is divided just above the clavicle and the internal jugular vein is doubly ligated and cut across. The common carotid is thus freely exposed and a clamp covered with rubber tubes, is accurately adjusted upon it, using no more pressure than necessary to stop the circulation. The skin-flaps may now be dissected up freely, exposing the whole side of the neck. The sternomastoid muscle, the internal jugular vein and all the surrounding fat, lymph glands, and cellular tissue are dissected up in one mass, leaving only the common carotid artery and the vagus and phrenic nerves. The submaxillary tissue and glands are removed in the same mass. The internal jugular vein is ligated as close to the skull as possible and the tissue cut away. After the mass has been removed, the clamp on the carotid artery is gradually loosened and the bleeding points caught and tied. However, I usually ligate the external carotid artery when it is reached in the dissection, and thus control all the bleeding in this area and avoid the necessity of tying a number of points.

This operation has greatly improved the technic of operations in the neck for cancerous glands. The lymph glands in the neck are abundant and the lymph channels anastomose freely; so freely in fact, that the lymph current is not always the same. If one gland is blocked, the lymph current may be switched from its usual course, and so may involve glands that under ordinary circumstances would not be affected. These glands hold can-

cerous tissue in check for a long time, but so numerous are they and so intimate is their connection that after two or three glands are involved the cancer cells will be found widely distributed and many glands not palpable to a careful examining finger will be infected. Unless all this tissue is removed in one mass there is little chance of effecting a cure. The permanent recoveries after this technic have been greatly increased, statistics of Crile showing cures in a percentage of cases approximately four times greater than after the older method of merely dissecting out the glands.

CEREBRAL CONCUSSION: COMMOTION CEREBRALE: BRAIN SHOCK.

By LARKIN WHITE GLAZEBROOK, M. D., Washington, D. C.

The subject which I propose discussing in this paper, is one which has for the last fifteen years been brought constantly to my attention and has perplexed me, as much as it has other workers in this line. Medical literature is complete in its variance upon the possibility of its existence. Among the older writers the condition was considered, in its true sense a distinct entity. I cannot but feel however, that many cases in older times were not absolutely demonstrated. Early in the last century opinions were more uncertain, due no doubt to more frequent autopsies, demonstrating actual injury to the brain or its vessels. In 1852, Robert Druitt, of the Royal College of Surgeons, states with much positiveness, that concussion, or stunning, produces a sudden interruption of the functions of the brain, not attended with visible organic lesion, and that this condition may be fatal. Erichsen, a few years later in an exhaustive article, says that concussion, or stunning, appears to be a shock communicated to the nervous system from external violence, which will produce sufficient commotion of the brain substance to be fatal, no lesion being demonstrated by careful dissection. P. Hewett is quoted as follows: "A man died instantaneously or lingered perfectly unconscious after an injury to the head. What is said to have happened? Concussion of the brain. The head is opened and what is found? In one case no deviation from the healthy structures; in another simply engorgement of the cerebral vessels."

Taylor, in his *Medical Jurisprudence*, in

1880, stated that it is important to remember that neither compression nor physical injury, is necessary to render concussion fatal; that may be entirely dependent upon shock to the nervous system. After death no morbid change is discovered.

Coming down to a later period, attention is called to that great surgeon, John Ashurst, Jr., who in 1871 writes: "It is a rather mortifying confession, that the idea of the surgeons of the present day, are much less definite, than those of their predecessors. Cerebral concussion is not shock and not a purely functional condition, apart from an organic condition. Older writers declared that a man might die from concussion, without a lesion; this fallacy has been exposed by modern writers. He, however, states that we may have a tremetation of the cerebral mass, with temporary arrest of cell action. In 1893 those two leaders, Drs. Keen and J. William White, state, that the term is unfortunate, as it conveys the idea of a functional rather than an organic lesion. There may be slight injuries, properly called concussion, but it is better to consider concussion as usually equivalent to laceration of brain tissue.

Roswell Park summarizes the subject as follows: Our present position is that the possibility of pure concussion, disturbance of brain function, without gross mechanical lesions, is admitted, but its general frequency is denied. Boyer, who has given the name "commotion cerebrale" to the condition, says shock may be complicated by hemorrhage, but the two conditions are in reality absolutely distinct.

E. Wyllys Andrews, of Chicago, recently stated that the great German authorities—Koch, Filehne, Bekeles, Von Bergman and Buddinger—have established brain concussion as a true pathological condition.

Thelwall Thomas, of the University of Liverpool, writes that it would seem that enough autopsies have been held on persons dying from pure concussion to prove beyond doubt that this condition can be present in fatal cases without visible lesions. Animal experiments show that pure shock can occur without a lesion being shown by the microscope. Death may occur from shock, just as from the same condition produced by the head injuries, and leave no pathological lesion. What I have endeavored to

maintain is that shock and ordinary concussion are one and the same thing.

Having reviewed in a hurried way these views of such masters as those referred to, and noted their differences, is there any wonder that we still must admit a certain doubt as to the true condition?

I realize that the subject is not of sufficient general interest to entertain the attention of every practitioner. I, however, believe that it is a question which we must all determine to our personal satisfaction, especially when we realize the frequency with which all classes of workers are willingly or otherwise peremptorily brought to face the question from a medico-legal standpoint, either in criminal proceedings or in civil courts, in connection with insurance claims.

It is not my purpose to enter upon the question of treatment, symptoms or differential diagnosis of this condition; my chief desire is to have you answer the question which I am often forced to answer—Is it possible for a person to receive a direct or indirect injury to the head, sufficient to cause death, without presenting at the autopsy table evidence of fracture, edema, hemorrhage, contusion or laceration?

Or, is it possible for a person to die from brain shock, pure and simple, as from other forms of so-called shock?

My answer to these two queries, after careful observation and no little experience, is in the affirmative. That the question is, as I have stated, still debatable, was illustrated in a case in which I was called to testify several years ago, in which a number of our leading surgeons were arrayed against me, in a homicidal case in which this question was the chief one involved. If I was in error, and the legal hanging which resulted was in any way due to my opinion, I shall never cease to regret my stand. The degrees and extent of brain shock, in such a highly organized structure as the organ in question, differ. No one questions the assertion, so far as I am able to see, that we may have mild degrees of such shock.

Having stated with candor my position on the subject, let me quote a few facts which I have noted and in part influence the said opinion.

During the time since 1900 I have performed 500 autopsies.* Of this number 161 resulted in death as a result of injuries to the head.

There was fracture, plus hemorrhage in 126.

There was fracture, plus hemorrhage and abscess, in 5.

There was hemorrhage, with or without contusion, no fracture in 24.

There was concussion or brain shock, with no other lesion in 6.

Gunshot wounds in 12.

Stab wounds in 1.

Only 33 operative attempts were made.

The following are short histories of the six cases in which death occurred from certain head injury in which no fracture, hemorrhage, edema, contusion or laceration was present:

1. W. B. C.; white; 60 years; weight 135; height, 5.9.—While riding on an electric car was thrown to an asphalt pavement; scalp contusion noted over the right parietal region, with hemorrhage beneath the scalp. Complete unconsciousness. Lived four hours. General condition of shock noticed. Autopsy findings negative, except for the fact that all cerebral vessels were engorged.

2. C. F.; white; 65 years; weight, 160; height, 5.10.—Accidental fall down a flight of stairs. Complete unconsciousness, continued until death, ten hours later. Autopsy disclosed hemorrhage beneath the scalp of the frontal portion of the head. Vessels of the brain were more or less empty; anemia. Otherwise normal.

3. P. S.; colored; 16 years; weight, 80; height, 6.2.—Accidental fall from a scaffold, contusion over face. Complete unconsciousness until death, two hours later. Autopsy, brain anemic, otherwise normal.

4. W. G.; white; 36 years; weight, 126; height, 5.6.—Accidental fall upon concrete floor. Complete unconsciousness for eight hours, when he died. Autopsy, lacerated, contused wound over right occiput. Vessels of brain engorged, brain otherwise normal.

5. G. F.; white; 20 years; weight, 150; height, 5.8.—Fell down elevator shaft. Lived five hours; complete unconsciousness. Autopsy, face badly contused. Brain anemic. No other lesion.

6. W. B. C.; white; 46 years; weight, 175; height, 5.8.—The following is quoted from the physician who was called to see him: "Saw patient in the morning of January 8th; found him in the condition of complete unconscious-

*1500 since 1893.

ness; breathing shallow and labored; pupils slightly contracted. Was told that he had accidentally slipped on a rug which was placed on a slippery floor (cement); he fell heavily, striking the back of his head against the bathroom door, which was closed, the fall breaking a panel out of the door. Taken to the hospital at 11 A. M. Urine was drawn and examined with negative result. At 9 A. M. pulse 140; temperature 103; breathing difficult and rapid; pronounced unconsciousness. Died at 3 A. M.

Autopsy.—Body had been embalmed. About three quarts of blood had been drawn from the body by the embalmer. Body well nourished and muscular. No external evidences of violence. Slight scalp edema at left occiput; no hemorrhage beneath the scalp. Skull normal thickness. Brain bloodless. Negative findings.

Relative to these cases it will be noted that I have not given very full details, not wishing to consume your time, feeling that the simple statement of facts was all that was necessary.

Finally, let me ask one additional question: A man is kicked in the left breast, a skin contusion is noted, no ribs are broken, no organ injured; from a post-mortem standpoint, the examination is negative. What was the cause of death? Would I be criticized when I give it as my opinion that it was due to shock? If this be true, as well as sudden injuries in other parts of the body, why must I not assume, with negative findings, in an organ as highly organized as the brain, that brain shock, with fatal results, does occur?

Is it not a fact that many persons recover from extensive skull fractures with small hemorrhages and badly lacerated brains? Is it not also a fact that often we see trivial fissured fractures with small general hemorrhage, with slight or no cerebral laceration, die? Would we be considered radical if we said that shock played its part?

Can we not accept the statement in Sajous' *Analytical Cyclopedia* of 1906: "A jostling or displacement of the molecular elements of these cells, even though it be microscopically minute, must suffice to induce functional derangement, or abolition of the thinking faculty; the cardio-pulmonary functions being disturbed, depending on the effect on the centers at the base of the brain. Miles has found a

temporary anemia of the brain in concussion, a reflex result of the stimulation of the restiform bodies and perhaps other important centers in the region of the bulb. These parts are stimulated by the cerebro-spinal fluid, which rushes through the aqueduct of Sylvius, the foramen of Magendie and the subarachnoid space, with concussion, when a severe blow is dealt on the head. Hence, the cerebro-spinal fluid will disturb the equilibrium of the ultimate nerve cells throughout the nervous system."

2022 P. Street.

USES OF THE STOMACH.*

By M. O. BURKE, A. B., M. D., Richmond, Va.

The savage had no need of a store-room; the Puritans carried but little baggage, while the modern traveler has many trunks and boxes. There is a modern guild, the members of which, like the apostles of old, carry neither script nor wallet; but they add nothing to the financial, moral or intellectual wealth of the nation. An engine without a tender is almost a useless piece of machinery; so is a man without a food receptacle incapacitated for work.

The chronological age of the universe is reckoned by years; the economical age of a nation is reckoned by deeds. Time is a necessary factor in the accomplishment of all things; hence, that which saves time adds just so much to the material wealth of the nation. A population without a food receptacle would accomplish but little between meals, and we all know that we cannot serve two masters at the same time. The human stomach is an economical as well as an anatomical necessity.

First, let us consider the economical side of the question. Before coal became plentiful, the locomotives were fired with wood. It was necessary to make frequent stops to supply the tender with fuel; consequently, it required almost as much time to replenish the supply as was consumed in travel between stations.

If man had no food reservoir, he would be in very much the same condition as the old-time engine—he would have to supply food with one hand and work with the other. Fancy the farmer dining at the end of every furrow, the surgeon replenishing his energy between operations, or the politician stopping in a heated de-

*Read before the Richmond Academy of Medicine and Surgery, March 24, 1908.

bate to throw on a little more coal. Even the professional liar would find the drive wheels slipping and his own jokes too heavy to pull until a little more steam could be generated.

Man without a stomach would be a non-progressive citizen. Columbus would not have dared to cross the ocean, nor Hannibal the Alps, and Alexander might have lived many years longer if man had had no stomach. Napoleon would not have shaken the earth with his cannon, nor Washington survived the winter at Valley Forge.

Where would be the philosophers, the poets, or the writers of fiction? What would the world know of science or art if man had no stomach? Watt's teapot-lid would have risen and fallen, but no engine would have been conceived from its vapors. Franklin's kite might have ascended into the heavens and the lightnings continued to play upon the clouds, but the incandescent globes would never have sent out a ray of light. The earth would have held in silent slumbers her treasurers of priceless wealth; and the nations would have remained strangers until Gabriel assembled the hosts in the final day on the plains of the New Jerusalem.

Let us briefly glance at the physical or anatomical necessity of a stomach. The human engine is constantly pumping from the moment we are born until the last breath has left the body. This engine must be supplied with fuel, and, when the natural supply is exhausted, like the people of the Dakotas we begin to burn the fences and even the walls around us.

Normally, the intestinal tract is never empty; the stomach does not pump its contents all at once into the duodenum, but issues the material to the gut as nature demands and is able to handle it. We eat a hearty meal of vegetables, meat and bread and butter, a sweet with a cup of coffee or glass of milk. We have starches, sugars, fats and proteids taken at random, with no thought of the chemical changes that must take place before these materials can be utilized by the different tissues, perfectly oblivious of the fact that we are taking fuel, not force, into the body; and far too often do we forget that we have only one set of mill wheels in the alimentary tract, and swallow our food in chunks instead of grinding it into a pulp.

If we had no stomach what would be the re-

sult? For a time the intestines would digest a portion of each kind of food; the remainder would be hurried through the canal undigested; the chunks would irritate the walls of the gut, causing an increase of the secretion from the glands, an increase of the muscular activity; overstimulation and overactivity would be followed by retarded action, and we would have diarrhea and constipation alternating, just as we have in cases of achylia gastrica.

It is true that several patients have been able to live without a stomach, and have been able to eat and digest a moderate amount of food, but they have not been numerous enough to prove more than an exception to the rule. The intestines can digest enough of all kinds of food to supply the needs of the body independent of the stomach; provided this food is supplied in suitable form and proper amounts; but we do not care to spend so much time in replenishing the fire when we have a very good fireman and an ample tender in the form of the human stomach.

The evolution of centuries has provided man with a pouch in which to carry fuel, and has wisely arranged matters so that this fuel is shoveled into the furnace as the fire needs replenishing. I desire to emphasize the fact that one of the most important, if not the most important function of the stomach, is that of a receptacle for food, endowed with the power of supplying this food to the intestines as they demand it and are able to handle it.

It has been proven by Cannon and others that the storage portion of the stomach occupies about four-fifths of the organ; i. e., all of the stomach lying to the left of the longitudinal portion of the lesser curvature, and the remaining one-fifth is the grinding part of the organ. Cannon also tells us that the peristaltic waves begin about the middle of the stomach and do not materially disturb the cardiac portion.

The stomach is not only a reservoir, but also a factory, a chemical laboratory, a mill, and sometimes a brewery. The mucous membrane of the stomach has a wavy arrangement dipping down here and there forming little crypts. These waves or crypts are covered with columnar epithelium. At the bottom of the crypt and opening into it are tubular glands. These little tubes are lined with cells of the columnar variety which present a granular appearance.

These cells are known as the chief or central cells, and they are the manufacturers of pepsinogen and rennin. In the cardiac portion, between the chief cells and the basement membrane, we find a few large, ovoid cells which have a special duct or space opening into the main duct of the tubule; these are known as the parietal or oxyntic cells; these manufacture the HCl, and are found only in the cardiac portion of the stomach. Then we have the goblet cells of the crypts and portion between the tubules, which secrete mucus—the lubricating factory, and it is through these cells that absorption takes place.

These little factories begin to put their products on the market in about ten minutes after food enters the stomach, about the same time the mill begins to grind. The food is thoroughly mixed with the secretions and a chemical change takes place. The lumps are ground to a pulp, the fibrous tissue dissolved, the fat globules liberated, the albumens and meats changed from an unabsorbable to an absorbable material. The milk is coagulated and made ready for use. As the mill completes the grinding and chemical changes have taken place, the peristaltic waves carry the grist to the pylorus, through it and thus the food is emptied into the duodenum.

This is a stomach in health. Unfortunately, we have offended nature too many times, and as a result, our stomachs, along with other organs are crying for mercy. Nature, and especially human nature, always tells us when the machinery is out of order, and it is up to the physician, the machinist, to investigate the trouble and remedy it as far as possible.

For many centuries, we were groping in the dark, but, thanks to Dr. Beaumont, and others, we have learned something definite about the stomach, and to-day we measure its size, observe its position, calculate the time it retains its contents, estimate the amount of HCl it secretes, the amount of enzymes it manufactures and the kind of glass it brews. By the aid of the X-ray we look through the closed doors of nature and observe the peristaltic waves, the grinding of the mill wheels and the grist as it pours out of the shaft.

By the aid of the microscope we observe the condition of the undigested particles of food, the kind of bacteria that are present, the abnormal material, such as pus, blood, etc.

By the aid of the stomach tube, a few chemical re-agents, a pitcher, a large bottle, a few of glass and rubber tubing, and a microscope, we can learn a great deal about the true condition of the stomach.

RECENT DEVELOPMENTS IN THE STUDY OF CANCER.*

By HARVEY B. STONE, M. D., Charlottesville, Va.
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If to any representative group of medical men at the present time there were put the question, "What is the greatest problem before the medical world to-day?" I believe the answer would be almost unanimous, "The cancer problem." Many great problems of the past—*anesthesia*, *asepsis*—have been brought to a triumphant conclusion; many of the present—*sanitation*, *tuberculosis*—if not entirely solved, are at least well along in the process of solution; but many face us still entirely obscure, or with only glimmerings of light, and in the latter category, the cancer problem, which may be extended to include the whole tumor problem, is unquestionably the greatest. Many facts impress this upon us. There has been much talk of the increased frequency of cancer in late years. Indeed, so much attention has been attracted to this question, that the public mind has been from time to time disturbed by sensational and exaggerated statements concerning it in the popular press. The results of treatment are so far from satisfactory, that they may conservatively be called, with certain reservations to be later elaborated, usually unsuccessful. The conceptions as to the cause, the pathology, and the proper therapy, are generally greatly confused. For all of these reasons the subject is one that must claim our most concentrated interest, and accordingly, I believe the review of some recent work concerning it will not be amiss.

It is manifestly impossible, however, to adequately handle even one aspect of so large a subject under the present circumstances, and, therefore, I shall take up briefly only three points upon which recent work has been done, and which are of paramount importance. Arranged in natural sequence, these points are: I.

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Theories of Etiology; II. Manner of Dissemination; III. Methods of Treatment.

In considering point No. 1—Theories of Etiology—I desire to call to your attention an article entitled "Cancer Problems," by James Ewing, of New York (*Archives of Internal Medicine*, Feb., 1908), and to earnestly solicit those who have not read it to do so. It is an article of wide scholarship, deep philosophy and sound conclusions, to say nothing of the literary charm which makes it so readable. In this monograph the question of the cause of cancer is dealt with at great length, and I can do no better than to refer you to Ewing's book upon the subject.

There are two great groups into which the theories as to the cause of cancer may be divided—the *parasitic theory*, or the belief that the casual agent is some living creature distinct from the organisms affected, and the *cell autonomy theory*, which regards the direct agent as certain cells of the organism itself which have become perverted by the attainment of abnormal properties.

Much evidence of a clinical nature has been adduced in favor of the first, or parasitic theory. We have all heard of cancer houses, cancer in husband and wife, etc. In passing, an article by Dr. Tynes, of Fishersville, Va., in the *Journal of the American Medical Association*, on "Endemic Cancer," is worthy of notice. Interesting also are papers by Pick and Plehne of apparent epidemics of thyroid cancer in trout, and epithelioma of the eye-lid in certain herds of cattle. Suggestive as such facts are, when subjected to close criticism they fail to support the parasitic theory, for certain phenomena observable in all these cases are incompatible with the known characteristics of parasitism; and *vice versa*, certain distinguishing features of parasitism are lacking in so-called cancer transmissions. For instance, in the cases among animals, only the senile are attacked, the young escaping. Again, slight differences in variety of the animals was an insuperable barrier to the transmission of the disease. Thus, specimens of both *Salmo fontinalis* and *S. iridens* were confined in the same ponds, one variety developing the disease rather extensively, but the other escaping entirely. Again, slight changes in environment, —soil, water, food, etc., seem to put an end to the

so-called infections. As for the cancer houses, "*cancer a deux*," etc., not enough authentic cases have ever been described to prove anything more than coincidence considering the wide prevalence of cancer. Further, cancer attacks one tissue and stays in that tissue; that is, if a carcinoma begins in the breast, the metastases in lymph glands, liver, etc., are not masses of lymphatic or liver tissue, but masses of abnormal misplaced breast-tissue. With what parasite are we familiar, that invades only one tissue and causes that tissue to wander about lawlessly among the other organs? Unquestionably, the parasitic theory does not stand close scrutiny.

The cell autonomy theory is not nearly so simple as the parasitic theory; indeed, in its present and most acceptable form, it is a very composite conception. It has been gradually solved by the extension and development of the older theories of Cohnheim and Ribbert, as well as by the aid of principles drawn from the fields of comparative anatomy, embryology, and general biology. It is, of course, impossible here to go into the history of this theory, for which I must refer you to Ewing's article before mentioned. Suffice it to say, that this theory regards cancer as a growth, dependent, not upon the life of some external parasite, but upon a fundamental change in the biologic properties of certain of the cells of organism attacked, so that these cells themselves constitute the primary unit of cancer. Such cells no longer are restrained by the equilibrium of organization which normally maintains the proper proportions between the various tissues. They no longer obey the laws of normal mitosis, and their multiplication is no longer in response to physiologic needs, but in direct opposition to them. In other words, these cells, though descended from normal cells, take on new properties, which makes them in effect a new biologic species, playing the part of parasite toward the organism from which they spring. So well is this conception supported by clinical and experimental evidence that we are well-nigh driven to accept it, and it satisfactorily explains most of the life history of malignant growths. Unfortunately, it leaves us in the dark upon the most important point of all—the mode of origin of such growths. For we still have to seek the factors which start cancer cells upon

their pathological course. While the cell autonomy theory has been of great service in developing the idea of the cancer cell as the primary unit of the trouble, and also in disabusing the medical world of the fallacious parasitic idea, it has simply pushed the problem one step further backward towards solution, and we have still to seek the fundamental cellular change which leads to cancer. Many theories have been advanced, some probable, some most bizarre, to explain this fundamental disturbance. With many of them,—chronic irritation, embryonic displacement, etc,—you are all familiar, and the suggestions have ranged from such highly reasonable ones as these to the wildly remote—as the sexual conjugation of a leucocyte and an epithelial cell. But whatever the primal reason that the future may discover, we feel sure that it will be a cause acting from within the organism, and not an external invasion.

Next in sequence to the work done upon the cause of cancer, we come to the investigation into its manner of dissemination. In a monograph entitled "Cancer of the Breast: Its Operative Treatment," the latter question is most carefully considered by the author, W. Sampson Handley, of London. By the development of a new technique, Handley has been able to demonstrate facts, regarding the spread of cancer, which will undoubtedly make more definite and decisive the attitude of the medical profession to this most vital question. The technique may be briefly described as follows: The entire body is hardened with the tumor in situ, and then long thin strips are cut from its surface, running out radically in various directions from the primary growth as a center. As a result of improved methods these strips may be cut as long as desired—say a yard and a half, and as thin as six millimeters, and including all the soft parts—that is, including everything from the skin surface down to the bones. Such a section is treated just as a microscopic slide, stained, cleared, mounted between long strips of glass, and studied by transmitted light. The cancer cells are easily recognized and their relations very clearly made out.

As a result of investigation carried out in this manner, Handley has reached certain conclusions, which may be tabulated as follows:

First. Cancer spreads principally by continuous growth, or permeation, along the lymphatic vessels of the deep layer of the superficial fascia. Embolism does not generally occur; hence cancer is a local disease, even when widespread. This is a most hopeful discovery. *Second.* This spread proceeds in an ever-widening circle about the primary growth, the microscopic growing edge of the lymphatic infiltration really representing the limits of the tumor. *Third.* That the resistance of the body to this process is definite, but ineffectual. *Fourth.* That radical operation offers practically the only hope of cure, and that "radical" operation means excision beyond the microscopic edge. *Fifth.* That such removal is practicable only in the early stages of the growth.

From these experimental and clinical studies certain practical facts may be deduced for our help in daily work. To give point to these facts, I desire to quote some statistics published by Dr. Halsted, of Baltimore, in a paper read before the American Surgical Association, Washington, 1907, entitled "Results of Radical Operations for the Cure of Cancer of the Breast." In this paper are concisely put a number of most important facts regarding the early diagnosis of cancer, various operative procedures, and results carefully tabulated from many points of view, but the fact that I desire to emphasize is contained in the following brief statistics. Percentage of cures in cancer of breast:

With axilla and neck uninvolved—60 cases—75 per cent. cured;

With axilla involved, neck free—110 cases—24.5 per cent. cured;

With axilla involved and neck involved—40 cases—7.5 per cent.

By "cured" is meant cases that have been followed for four or more years after operation, with no evidence of recurrence. These figures need no rhetoric to force them home. In the first class of early cases, 75 per cent. are cured, and herein lies the reservation to which I alluded when I said our therapy is a failure. In the late cases, the failures are 92.5 per cent. Need any more be said as to the absolute necessity for early diagnosis and early operation?

I have now enunciated the two great principles of practical importance in our attitude to-

ward malignant growths, namely, "early operation" and "radical operation." Parenthetically, let it be said, in practice every suspicious growth should be treated as malignant. With the application of the first of these principles,—early operation"—the general practitioner has most to do. It is he who first sees the cases, whose advice, nine times out of ten, either saves or condemns the patient, and upon him lies the onus of making the earliest possible diagnosis. Into the details of this matter we cannot now enter, but I would repeat my former remark that any suspicious growth is to be regarded as malignant until proved otherwise, and should at once be taken to a surgeon for consultation at least, if not for immediate operation.

In regard to the second of these *dicta*, "radical operation," I should like to say a few words about recent changes. You are all familiar with the classical Halstead operation. Now, following out the ideas of Handley, two steps of practical importance should be added. The first of these is based upon the fact that the deep fascia is the highroad of cancer migration. It consists in the extensive undermining of the skin, about the circular incision, and the removal of a large block dissection of fat, fascia, and muscle, over an area concentric with, but much larger than, the circular skin incision. The second step is the addition of a new incision running from the circular incision toward the umbilicus.

VESICAL CALCULI, WITH REPORT OF A CASE.*

By RUFUS L. RAIFORD, M. D., Conley, Va.

In order to understand the formation of vesical calculi we should bear in mind that normal urine is a solution of various organic and inorganic materials dissolved in water; the latter constituting about 90 per cent. of the whole. The important organic constituents are urea and uric acid; the inorganic consist chiefly of the salts of sodium, potassium and magnesium. There is of course also a certain amount of renal and vesical mucus and epithelium present even in normal urine.

So long as the body is in a normal condition these organic and inorganic solids are held in

solution and are thus completely evacuated from the bladder. However, in certain abnormal conditions these solid constituents of the urine may become agglutinated, forming stones, which, according to their composition are classified into three varieties:

First.—*Uratic calculi*, composed of uric acid and urates. These are softest in consistency and form about three-fifths of the total number of calculi.

Second.—*Oxalic calculi* are formed from oxalate of lime. These are the hardest of all the varieties and are usually studded with numerous nodules, giving them the name of mulberry calculi. They are more rare than the other varieties; their estimated proportion being about 3 per cent.

Third.—*Phosphatic calculi* which make up the remaining portion, are formed from phosphates and carbonates and are often combined with the urate of ammonia.

Stones may be further classified as primary, or those depending on a constitutional or diathetic state; and, secondary, or those resulting from cystitis and decomposing urine. Uratic and oxalic calculi are in the former and phosphatic in the latter class.

In regard to number, stones are usually single, but sometimes five or six may be present, and instances are on record where as many as three or four hundred have been removed from one bladder. Furthermore single stones may become multiple through a process of spontaneous fracture.

For a calculus to form it is usually necessary that there should be a foreign body in the bladder, since the crystals must have a nucleus around which they may coalesce and adhere. The nucleus may be a foreign body introduced from without, such as a broken catheter, hair pin, etc.; or it may consist of a piece of necrotic tissue from the bladder wall or surrounding bony structure or a clot of blood. In many cases the nucleus is composed of uratic crystals which have become agglomerated in the kidney and pass through the ureter, giving the familiar symptoms of kidney colic. They drop into the bladder, and if they are not void with the urine, form a nucleus. In some instances crystals are glued together by the mucus existing in the bladder and thus form the nucleus for a stone.

As has already been stated, uratic and oxalic

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calculi are dependoent on a constitutional or diathetic state, and certain things which influence the bodily health play an important role in their formation.

It was formerly thought the habitual drinking of water impregnated with lime salts was a cause of vesical calculus. Yet, investigations have shown that cases of calculus are no more frequent in limestone districts than in adjacent regions where the water is free from lime.

Diet and constitutional habit are, however, important factors in the formation of stone since the elimination of uric and oxalic acids depends, to a great extent, on the quality of food and the diathesis. For this reason children with feeble digestive powers who eat largely of nitrogenous foods, are unable to completely perform the process of oxidation, and the results of the natural tissue breakdown must be eliminated, not as urea, which is freely soluble, but as insoluable urates and oxalates, thus providing a good soil for the formation of calculi.

For the same reason adults who partake freely of nitrogenous foods, use alcohol and malt liquors excessively, and take but little exercise are subject to attacks of gout or the various manifestations of lithemia, which are included under the head of gouty diathesis. This gouty diathesis being notably an inherited condition, we readily account for uratic and oxalic calculi developing in successive generations of the same family.

Phosphatic stones being secondary to inflammatory changes in the bladder are seen most frequently in adults past middle life. The decomposed urine throws down crystals of the triple phosphates, which are glued together by muco-pus, and the process of accretion around a given nucleus goes on rapidly until stones of enormous proportions are sometimes formed. On this account anything, such as stricture, enlarged prostate or atony, which prevents the bladder from completely emptying itself allows residual urine to accumulate with cystitis and probably stone formation as a result.

Though a small, smooth stone may exist in the bladder for years without producing marked symptoms, or even a comparatively large one which has become encysted, may pass the notice of both the patient and the surgeon, yet we usually note the following prominent symptoms:

Pain, frequent urination, blood and sudden stoppage in full stream.

The pain is referred to the head of the penis and shoots into the perineum, down the thighs, and is increased by riding or jolting or even by walking.

Increased frequency in urination is noticed in the day when the patient is about on his feet, this symptom usually not being present at night.

Blood never appears in large quantities and is not a constant symptom.

Sudden stoppage in urination is, when present, a very valuable symptom. It is caused by the stone rolling down over the outlet and cutting off the stream, but is rarely noticed in old men with enlarged prostates.

Diagnosis of stone in the bladder is suggested by the above symptoms, and the history of the patient, but must be confirmed by actual touch with the sound. In recent years the X-ray has been of value in diagnosis though it cannot be put to general use. However, in cases where stone is strongly suspected and cannot be confirmed by the searcher, the X-ray should be used to help clear up the diagnosis. The cystoscope is also of great value in making a diagnosis.

The treatment of vesical calculus resolves itself into preventive and operative. Patients with a tendency to the formation of uratic and oxalic calculi should receive the proper dietetic, hygienic, and medicinal treatment. Proper local and systemic treatment should always be instituted where residual urine exists, for it is here that we have the phosphatic variety.

In regard to the operative treatment, one prominent surgeon writes as follows: The surgery of the bladder and prostate gland has, within the past decade, enjoyed such satisfactory progress that operative methods are being reduced to general rules of simplicity of technic and recognition of certain physical conditions which determine the course to pursue. In no other branch of surgical endeavor has greater change of practice occurred than in that of dealing with vesical calculi. The days of the lithotrite and of perineal lithotomy are happily past, and instead the simple, safe and quickly executed supra-pubic operation is now universally in vogue.

Though this statement may be somewhat

overdrawn, yet the supra-pubic appeals to me as ordinarily the choice of operation, for by this method the surgeon has a direct view of the interior of the bladder, which is a great advantage over working in the dark as in the other operations. Of course, there is the danger of infiltration and tissue necrosis on account of the prevesical fat, but, with proper technic, this is usually avoided.

I will report a case in which the supra-pubic operation was practiced.

On the night of March 10, 1908, I was called to see a white boy who was suffering dreadfully from retention of urine. He had been unable to urinate for nearly twenty-four hours and a distinct enlargement was visible over the region of the bladder. After failing with a soft rubber catheter, which was rather limber, I introduced a metal one. Just as it passed the cut-off muscle into the posterior urethra, a distinct click was heard, and I could easily feel the stone as it was pushed back into the bladder. Nearly a quart of urine was voided and the patient was soon asleep.

The parents then gave me the following history: The boy, who was thirteen years of age, had been suffering with similar attacks ever since he was three years old, though they had been of short duration, and he had always been able to urinate freely. These attacks had been diagnosed kidney colic, and his father had been advised that nothing but morphine would be of any avail when an attack came on.

I advised the discontinuance of morphine, which he had used excessively, and that the boy be operated on at once; but the parents refused to consider such a step; so I left with the understanding that they would let me know if any further trouble developed.

On the third day following I was again sent for and found exactly the same condition as before, except that the pain was more severe. The parents were now willing for an operation, so I gave the patient five grains of boric acid three times a day in order that the urine might be made as nearly sterile as possible.

On the fourth day following this, Dr. Doles, of Ivor, Va., and I did a supra-pubic operation and removed a hard, mulberry-like stone about the size of a large peanut kernel. I could see that the interior of the bladder was in a fairly healthy condition and judged from digital ex-

amination, that the stone must have been a pretty tight fit in the posterior urethra. Why it had never become lodged there before the time of my first visit I am unable to state, but such must have been the case, as the stone was so firmly in place that when I tried first to introduce the soft rubber catheter it would not enter the bladder.

After the bladder had been thoroughly irrigated with boric acid solution a rubber tube was introduced through the lower angle of the wound and the latter closed in the usual way. In two days this tube was removed, and for a while all the urine was passed through the fistula. In five days my patient was sitting up in bed and was beginning to pass some urine through the urethra. At the end of a week he was walking about the room and the fistula was smaller. At the end of three weeks the wound had completely healed and the case was discharged. The boy at that time said he felt better than he had ever felt before in his life, and only a few days ago stated that he had never felt the least unpleasant symptom in urinating since the time of my last visit.

MODERN TREATMENT OF PULMONARY HEMORRHAGES.

By M. JUNGER, M. D., Ironville, Va.,
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Very little is to be found in text-books of medicine on the treatment of pulmonary hemorrhages. Usually the treatment recommended consists of rest in bed, ice bag to the chest, cracked ice, a hypodermic injection of morphine, a more or less complete list of astringents and styptics and finally a cold diet. He who blindly follows this advice is liable to do more harm than good, for in no other condition is strict individualizing more indicated than in this one.

By far the greatest number of pulmonary hemorrhages are due to pulmonary tuberculosis; it is therefore only natural that the sanatorium physician gains large experience in the treatment of the symptom, and it may not be amiss to give a short outline of the methods followed at the present time in most tuberculosis sanatoria in this emergency.

Rest in bed is one of the most important parts of treatment. Even the slightest hemoptysis should be considered an indication for putting

the patient to bed, for it often happens that this slight hemoptysis is a forerunner of a more severe hemorrhage. Beyond rest in bed further treatment will seldom be required. The blood spitting usually ceases in a few days, and the patient is able to get up in a condition practically unchanged. Should the cough be very persistent, and only then, a small dose of codein or heroin can be given; it will help to control the cough and thus diminish the danger of a hemorrhage.

The treatment becomes more difficult in case of a real hemorrhage. But even then, with the exception of severe hemorrhages, expectant treatment is the best. A moderate hemorrhage of from two to eight ounces usually stops of itself. With the patient resting quietly in bed probably no further treatment is needed. An ice bag may be applied. It will help to keep the patient quiet. He should be encouraged to cough up the blood collecting in his throat. The old method of advising a patient to suppress his cough with the idea that each attempt at coughing may increase the hemorrhage is now considered erroneous. On the contrary, it is now believed that by suppressing the cough, blood clots are left in the bronchi; the clots become aspirated to lower segments of the lung and, through secondary infection, often cause a broncho-pneumonia, a complication more dangerous than the hemorrhage itself. For the same reason no morphine ought to be given, and codein must be administered very carefully, and only in the case of very excessive cough.

It is the severe, copious hemorrhage which occasionally even becomes fatal that calls for the most energetic and prompt intervention. Two indications are to be met in this emergency—Firstly, empty the patient's respiratory passages to prevent him from drowning in his own blood; secondly, do everything in your power to stop the hemorrhage. The first is accomplished by placing the patient in a sitting posture, encouraging him to expectorate and, if necessary, removing blood clots from the pharynx and larynx with the finger. It is self-understood that a hypodermic injection of morphine would be directly fatal. To meet the second indication it is necessary to diminish the flow of blood to the lung and to diminish the pulmonary blood pressure. Elastic rubber bandages applied to the extremities tight enough to pro-

duce hyperemia will cut off a large amount of blood supply from the lungs. This procedure alone will greatly diminish the pulmonary blood pressure. But we have a powerful ally in amyl nitrite; a few minims of this drug inhaled will immediately cause dilatation of the superficial vessels producing a proportionate drop in pulmonary blood pressure. It has been frequently observed that by the administration of amyl nitrite a large hemorrhage was checked immediately.

In cases of persistent recurrent hemorrhages it would be worth trying a hypodermic injection of gelatin. About forty cc. of a perfectly sterile 10 per cent. solution can be injected at once and repeated in a few hours if necessary. In case of great loss of blood it may also become necessary to take recourse in infusion of physiological salt solution or to transfusion.

After a hemorrhage has been checked the treatment should tend to prevent its recurrence and to repair the damage done. Frequent measurements of blood pressure will greatly aid the physician in intelligent treatment. Where the blood pressure is too high nitro-glycerine or the nitrites administered internally as often as necessary will reduce it.

To enhance clot formation a large number of drugs were recommended. Of all the astringents and styptics hardly any have an actual effect. Ergot and stypticin might possibly be tried where the blood pressure was strikingly low from the start and the hemorrhage persistent. Calcium chloride is also recommended by many who believe they have noticed its good effects. Cracked ice had better be left out entirely. It is supposed to act by reflex, the cold producing contraction of the pulmonary capillaries. Its action is very doubtful, while by chilling the patient's stomach it affects an organ requiring the most careful attention in this condition.

To repair damage done by the hemorrhage it will be necessary to keep up the patient's strength, and to try to increase it as much as possible. A rich diet is the best remedy. For this reason the old policy of keeping the patient almost exclusively on cold milk for a number of days is faulty. Of late, Schroeder's method of reducing the blood pressure by limiting the amount of liquids is gaining more adherents. In general the excessive fear of warm food is

groundless. Hot food must, of course, be avoided. On the other hand ice cold food and drinks are sure to affect the stomach of the patient at a moment when this organ is most vulnerable and most needed. All this can be avoided by giving warm to luke-warm food. It can be given with safety. For the first day or two the food must be soft, so as not to require any chewing. Hashed meats, eggs, gruels are suitable. As soon as possible the patient should be put on a full diet, and the patient's appetite will often be surprising.

It often happens that as a result of a hemorrhage a broncho-pneumonia develops. This latter complication is not as frequent with the new method of treatment as it was under the old. The treatment of this condition differs in many respects from the treatment of other broncho-pneumonias, and I shall therefore add a few words on this subject. In an ordinary case of broncho-pneumonia we put the patient on a light diet, give expectorants and stimulants, and probably try to control the fever with hydrotherapeutic measures. Not so in our case. The diet must be rich, as stated before. Expectorants are liable to cause another hemorrhage and are better omitted entirely. Stimulants are likewise liable to injure the patient by raising his blood pressure and should be administered in cases of real need only and with great caution, if possible under control of the sphygmomanometer. For the control of fever it is not always possible to use hydrotherapy. At times it is better not to move the patient too much and in such case it is wiser to use an antipyretic. Pyramidon has proved the best in similar emergencies.

To sum up, in any kind of a hemorrhage morphine and cracked ice had better not be given at all. In small hemorrhages put the patient to bed and apply ice bag. In large hemorrhages apply elastic bandages to extremities, give amyl nitrite, also nitrites and calcium chloride internally. In recurrent hemorrhages try hypodermic injection of gelatin. Always reduce amount of liquids and give rich food, which must not be too warm nor too cold.

THE PESKY FLY.—The oil of bay applied or sprinkled in a room will effectually keep out flies. Its use is common in some countries.—Exchange.

THE FUTURE OF MEDICINE.*

By EMILIO L. HERGERT, M. D., Brooklyn, N. Y.
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Of all the learned professions of the present day—Medicine, Law and the Ministry,—there is none which foretells a brighter and more glorious future than the profession of Medicine. It is the oldest and noblest of all the professions—a vocation in a high degree interesting, dignified, elevating, humane and not the least lucrative.

Although it is generally conceded that the evils attending the practice of medicine as a business are due to an excess of supply of physicians over their demands, and in spite of the unfavorable financial conditions attending the practice of medicine, the enormous overcrowding of the profession, and the more rigid requirements for admission—these facts being widely known—still, the number of candidates applying for admission into medical colleges is yearly on the increase.

What is then the incentive of most young men to enter the field of medicine? In some it is social prestige; in others, the idea that professional life is more pleasant than a trade or a business career. In these two classes, earning capacity is not of much importance. But, in the majority of cases, the chief incentive is the possibility of making a livelihood.

Another factor for entering professional life is that medicine does not require any special talent or acuteness of special senses, or any high degree of muscular development, as in dentistry, music, art, most trades; and other occupations which have less prestige and financial possibilities than medicine. Still, if the individual does make good any educational deficiencies, and he continues his medical studies, employs a fair amount of tact and common sense, has good habits, good moral character and perseverance, he will be more of a success financially as a physician than as a tradesman or a business man.

There are few independent occupations which require as little capital to start as medicine and which are as certain.

The man who enters medicine is practically sure of making a living at least, and very sel-

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dom a fortune; and, although he may lose his accumulations, he cannot lose his occupation. Likewise, medicine usually allows a gradual retirement or even a reduction of work by elevating the fees so that the total income scarcely declines. This is not the case with a business man.

However, in a stricter business sense, medicine does not pay; and, although under existing conditions, individual incomes are not what they should be—considering the time, study and requirements necessary for professional attainment—it compares very favorably with many other occupations and professions.

Having considered the future of medicine from a business point of view, let us turn our attention to the possibilities of its future.

Foremost of all is *Preventive Medicine*.

Preventive medicine is a field in which an immense amount of work is being done at the present time, and in which extraordinary advances have been made within the last ten years. These advances have been achieved by the splendid abilities, unselfishness and indefatigability of the investigators as to the causes and distribution of the infectious diseases, encouraged by the generous financial backing of individuals and nations.

Prior to 1876, no disease was known to be of bacterial origin; but since then, think of the great army of investigators who have delved into the depths of bacteriology as the essential etiological factor in inflammation, suppuration and in the causation of specific diseases, and who have elaborated the different methods of preventive treatment.

Think of the researches of Pasteur concerning fermentation which have reaped many millions of riches in commerce, saved thousands of lives and untold hours of suffering both in man and beast.

Think of the investigations of Koch, concerning the Bubonic plague which he discovered to be disseminated by rats and fleas, and whose destruction is a *sine qua non* for its annihilation; his researches on malaria and those of Col. Gorgas on yellow fever, both disseminated by mosquitoes; Koch's present researches into the etiology and treatment of trypanosomiasis

(African sleeping sickness); his tuberculin test so valuable in the diagnosis of tuberculosis, especially in cattle; Behring's anti-diphtheritic serum; the numberless sera being to-day elaborated by independent observers all over the world against cancer, cerebro-spinal meningitis, septicemia, tetanus, etc., which, although at the present time have not proven to be as incontestable as the serum against diphtheria; still in the near future, we hope, will prove to be powerful weapons in combatting those diseases.

Metchnikoff states that preventive measures will ultimately rid the race of disease. These measures have already done much to improve the health of the human race.

Diseases seem to multiply with civilization, and we are constantly discovering new ones. Metchnikoff states that senility is nearly always precocious; that its disabilities and miseries are generally due to preventable causes. Infections, he says, rarely visit old age. Vesical affections and pneumonias are to be feared in the aged. Here, much can be done by preventive measures.

The colon, according to Metchnikoff, is the chief enemy of life. Man's unusually long and large intestine and his peculiar diet favor intestinal putrefaction which is phenomenon of senility.

Avoidance of alcohol and exclusion from the diet of rich meats and other putrefying articles of food should do much to prevent this.

He further states that the ingestion of the bacilli which cause lactic acid fermentation has the effect of inhibiting putrefaction, as for instance, buttermilk.

By all these means life should be greatly prolonged and the chief disabilities and miseries of old age prevented.

It is not impossible for men and women to live up to their hundredth year. To-day we have many who are living over the scriptural three score and ten, and they are all well preserved, both physically and intellectually. Plato, Michael Angelo, Titian, Goethe, Victor Hugo and many others produced their greatest and most important works after 70. These facts are a contradiction to the theory of Osler.

Disposing of the subject of preventive med-

icine as one of the factors of the future of medicine, let us consider *the part that drugs will play* in years to come. Many years ago as the result of the abuse of drugs there developed what is known as "Therapeutic Nihilism." This encouraged the development of homeopathy and the law of infinitessimals. Even to-day there are many prominent physicians who declare themselves therapeutic nihilists, and the profession cannot find much fault if the public should accept their declaration as truth, and encourage the people to seek relief from their sufferings by resorting to those irregular practitioners and their systems of treatment who condemn the use of standard drugs.

Prominent among therapeutic nihilists we may mention the late Oliver Wendall Holmes and our most esteemed colleague, Dr. Osler, who recently made an utterance in an address to a body of students in London: "Be sceptical of the Pharmacopeia. He is the best doctor who knows the worthlessness of most medicines. Study your fellow men and fellow women, and learn to manage them."

At a recent meeting of the Medical Society of the State of New York, held at Albany, Dr. A. Jacoby stated in his address on "Nihilism and Drugs," that there are always good practitioners found to be men having the greatest confidence in the power of medicines. He further states, that it is not only a mistake to suppose that medicines are largely useless in the treatment of disease, but the truth is that they constitute an army of almost indispensable weapons with which we combat the maladies which most frequently assail mankind.

A large number of medicines are unquestionably of the utmost value in the treatment of the sick, and that to teach otherwise, is to teach that which the great weight of medical opinion and observation shows to be untrue.

We do not question the great benefits conferred upon mankind by preventive medicine and its future possibilities; but the principal duty of the physician has been and always must be to cure the sick and injured; and to accomplish this purpose, we must avail ourselves of those standard medicines whose usefulness have been demonstrated by the experience of the profession.

To quote the words of Sir Dyce Duckworth, of London, England, we are suffering in these days from a widely spread spirit of incredulity, timidity and hopelessness in the whole realm of therapeutics. We spend much time in cultivating elaborate diagnosis, which of course is perfectly correct; but we grievously neglect our main business as healers and mitigators of disease. Our knowledge of *Materia Medica* has declined out of all proportion to that gained by the progress of bacteriology, which claims to supercede the older therapeutic art.

The prediction that the older therapeutic art, which means the art of treating the sick by the administration of medicines, will never be superseded by the progress of bacteriology, is worthy of note. What a man wants when he calls in a doctor is not a description of the particular bacteria which are working havoc in his blood, or a statement of his opsonic index, but to be treated in such a manner as to be relieved of his pain and cured of his malady; and he does not care how this end is effected, as long as it is accomplished. Failure in thousands of cases in which, under the prevailing practice, the patient is cured, would be caused by the therapeutic nihilism preached by such men as Holmes and Osler.

The field of medicine and surgery is gradually widening to such an extent that it is absolutely impossible for any one man thoroughly to master the general principles of the healing art. The constant progress which is being made yearly in the studies of the various branches of medicine and surgery; the natural adaptability of every individual to pursue a certain line of study; and not least, the greater financial returns which accrue from the pursuit of a certain branch of medicine or surgery, is gradually developing *Specialism*. Specialism is on the increase, and, granting the vast advances which are being made yearly in pathology, bacteriology, electro-therapy, operative surgery, etc., the general practitioner will in time be a thing of the past and will gradually be supplanted by the specialist.

Books on medicine which are written to-day are almost wholly devoted to a special class of diseases, and even these are indited by men

expressing so widely different and opposite views, that a severe task befalls the man who aspires to be perfectly conversant with his particular specialty.

The advances made in the discovery of new anesthetics, the training which the physicians are receiving to-day in the proper selection and administration of the various anesthetics; and the comparative safety and celerity with which prospective candidates to the operating table are rendered unconscious and emerge therefrom with the minimum of ill after-effects, tend to brighten the horizon of the future of the surgical art, and enable us to tide over a life which heretofore has been unduly sacrificed at the altar of timidity and scepticism.

Suggestive therapeutics, mechano-therapeutics, electro-therapeutics, balneo-therapeutics, hydro-therapeutics and many other non-medical therapeutic measures are making rapid strides, and will, to a great extent, revolutionize the future of medicine.

The discovery of newer and safer medicinal agents; the elegance and palatability with which medicines can be compounded to-day; and the manifold implements at our command for the accurate diagnosis and treatment of disease are all factors which encourage us to pursue our noble profession with the greatest zeal and sense of gratification in alleviating the pangs and sufferings of those who appeal to us for their alleviation.

May the future of medicine appear to us brighter and more glorious as years go by, and may we not cease hanging together to further the advancements of our noble art, whose supreme object is to prolong the course of life to a mellow old age, and to rob us of the terrors of death till such times as we are prepared gratefully and peacefully to accept them, the end coming as it would in its proper and natural place at the close of a long cycle of existence.

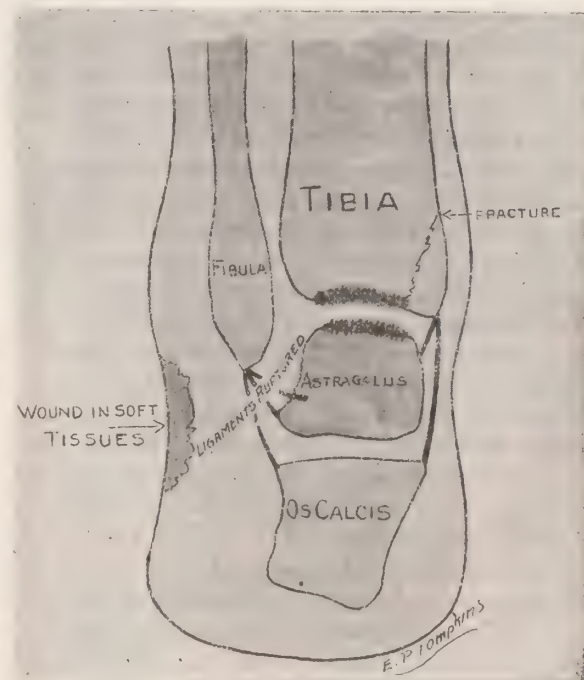
1275 Hancock Street.

AVULSION OF ANKLE-JOINT.---CAMDEN.

By EDMUND PENDLETON TOMPKINS, M. D., Roanoke, Va.

On a hot July day some years ago I was hastily summoned to an old lady who had, the messenger said, broken her ankle. On arrival

I found the patient, a woman of 63 years, had sustained not simply a fracture but what might be termed an incomplete avulsion of the ankle. The history was that while in the act of climbing down a ladder from a haymow, the foot of the ladder slipped out, precipitating her to the ground, a distance of some ten feet or more. She struck on her feet, or more probably on one foot, on a sloping surface of ground, and her foot was turned as it would in an ordinary sprained ankle, only more so, the momentum of her body being so great that the foot was turned completely over. The internal malleolus was snapped off, all the ligaments in the ankle joint torn apart, the ends of the tibia and fibula thrust through the skin, and the sole of the foot turned directly upward facing the body; the flesh shoved up on the bone, much in the same way a glove finger with a hole in the end of it might be shoved up on the finger. There had been some hemorrhage, but no considerable arteries had been ruptured. The wound was covered with chaff and litter, and the patient suffered severe pain.



I administered at once a hypodermic of morphine and atropine, and while waiting for it to take effect held a conference with the family. I told them two courses were open, one to amputate at once, in which event the patient,

if all went well, would be out of bed shortly; or secondly, and what I preferred to do, make an effort to save the foot, though with inevitably a stiff (ankylosed) joint, even if I succeeded, and a much longer time in bed in any event. I explained to them the risk of gangrene, etc., and that I might have to amputate later anyway. They were decided in their objection to immediate amputation, and I coincided with their view.

Returning to the patient, with only such assistance as the family could give, I put her under chloroform and with a warm bichloride the other side off so as to get access to the wound. trimmed off the ragged bits of flesh, and removed the tip of the malleolus which was broken off. Then I adjusted the foot in its natural position, made a sort of fracture box consisting of bottom, back and one side, leaving the other side off so as to get access to the wound. This was partly filled with cotton batting and the foot and leg held in it with adhesive straps. The wound was dressed with iodoform gauze at first; later, I believe, with boric acid in powder and plain gauze. I made the mistake of having the bottom (that is the sole portion), of the fracture box not quite at right angle with the leg, which allowed the toe to droop and hence interfered somewhat with the patient's walking.

The wound became slightly infected and discharged a thin sanious fluid for some weeks, but by diligent use of antiseptics—chiefly peroxide of hydrogen—it finally ceased. Then a tough grayish diphtheritic membrane formed over the wound, but this after awhile dried up or absorbed and the wound healed. Some trouble was also caused by an ulcer forming on the back of heel from pressure, in spite of abundant padding. I finally cut a hole in the fracture box at this point and pasted a firm cloth over it for the heel to rest on, with a pad of cotton interposed.

The long continued confinement to bed was very tedious to the patient, naturally active in habit, and gave rise to numerous small complications. Dr. J. C. Burks kindly saw the patient one time with me and assisted with his advice. I was several times at the point of advising amputation, and did take an amputating case to the house with me one day but never could quite get my own consent to take the foot off. I have sometimes since thought it would have

been better had I done so. But nevertheless the old lady gets about now in comparative comfort by aid of crutches. There is no particle of motion in the joint and it is somewhat enlarged but as the old lady said when I suggested amputation: "No, I don't want my foot taken off; when the Lord takes me I want to go *all together*;" her wish will probably be granted.

PRINCIPLES OF SURGERY.*

By STUART MCGUIRE, M. D., Richmond, Va.

Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE XLVI.

The Influence of the General Condition of the Patient on the Result of a Surgical Operation.

There are some operations, such as for the relief of a strangulated hernia, or the removal of a gangrenous appendix, which are so urgently demanded for the immediate purpose of saving life, that the surgeon has no choice and nothing is considered but the one great need. These are imperative operations, and must be done regardless of risk. There are other operations, such as for the correction of deformities, or the relief of some chronic ailment, which, however desirable, are not essential to the life of the patient. These are elective operations, and should not be undertaken without carefully considering the danger to be incurred on the one hand, and the benefit to be hoped for on the other.

In estimating the risk of an operation, the modern surgeon is too apt to base his opinion on the statistics contained in text-books and encyclopediæ. Figures are proverbially unreliable. Thus, for instance, the statistics of old operations, such as ligations and amputations, are usually a record of pre-antiseptic surgery and do not represent the work of to-day. While the statistics of more recent operations, such as thyroidectomy or gastro-enterostomy, are usually the record of master-workmen like Kocher and Mayo, and do not represent the danger of these operations in the hands of the average surgeon.

In deciding whether or not to advise a pa-

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

tient to undergo an elective operation, the following factors should be considered:

First, the gravity of the operation and the relief to be expected from its successful issue. There is no operation devoid of risk, and some are attended by great danger. Patients are occasionally unreasonable and insist on having a serious operation done to rid themselves of a more or less fancied ailment. Unless the operation is safe and there is a reasonable assurance of the patient being materially benefitted, he should not be subjected to a surgical ordeal.

Second, the ability and experience of the operator. No courageous doctor should fail to undertake an operation if the patient's condition is urgent, if delay means death, and if no more experienced surgeon is available. Competency is a relative term, and the man on the ground should endeavor to afford relief, or else fails to measure up to his responsibility. It is different, however, when the disease is a chronic one, and the patient could safely be moved to a hospital, or await the arrival of a surgeon from a neighboring city. The patient is entitled to the best possible prospect for prolonged life or restored health that his resources permit. No conscientious surgeon should undertake an operation without asking himself whether he has the skill to do the work satisfactorily. In many cases he can honestly answer the question in the affirmative. In some cases, while there may be a doubt in his mind, he is justified in operating by the fact that the patient has not the physical strength to bear transportation or the financial means to bring a surgeon from a distance. In other cases, however, the surgeon must recognize his inferiority to other men in the profession who devote their lives to special lines of work; and when the patient has the physical and pecuniary power to secure their services, it is his duty to place the case in their hands. This obligation is so universally recognized that the sacrifice it entails is not often appreciated by the laity, and sometimes not by the class of the profession which is benefitted.

Third, the general condition of the patient, or the consideration of the personal factors in the individual case which influence the result of the operation. It is often said—sometimes seriously, sometimes satirically, and sometimes truly—that the operation was a success, but the

patient died. In such a case, the indications for the operation may have been plain, but the contra-indications were either overlooked or disregarded. The operation may have completely corrected the condition from which the patient suffered, it may have been perfect in its technique and brilliant in its execution, but the patient may have lost his life from some complication which could have been foreseen by more careful preliminary investigation. Many surgeons have had uncontrollable hemorrhage to follow the removal of a small tumor, owing to the patient having hemophilia, or have had gangrene develop in a wound, owing to the existence of diabetes, or have had suppression of urine to follow, owing to the presence of nephritis.

Sir James Paget, in one of his classical lectures, says: "Never decide upon an operation, even of a trivial kind, without first examining the patient as to the risk of his life. You should examine him with at least as much care as you would for life insurance. It is surely at least as important that a man should not die or suffer serious damage after an operation as that his life should be safely insured for a few hundred pounds."

Two separate and independent examinations should be made of every surgical patient—the first for the purpose of diagnosis and the determination of the condition to be corrected; and the second for the purpose of prognosis, or the determination of the safety of the operation. In forming an estimate of the latter, many factors have to be taken into consideration, such as age, sex, race, habits of life, constitutional diseases and visceral disorders. In discussing these under separate headings, much use has been made of an article by Sir Frederick Treves, who acknowledges a similar indebtedness to the writings of Sir James Paget.

Age.—As a general proposition, it may be stated that patients at either extreme of life are poor subjects for surgery.

Children under five years of age take anesthetics badly, often suffer severe shock from only moderate loss of blood, and are difficult to manage during convalescence. They are liable to gastro-intestinal disturbances, especially in hot weather, and frequently are the victims of chickenpox, measles or other infectious diseases to which they are susceptible. On the

other hand, owing to the energetic cell activity of the period of growth, their tissues heal rapidly and are not prone to suppuration. In operating on children, avoid, if possible, the period of first dentition, as they are liable to digestive disturbances and to convulsions, and apt to develop a high temperature under little provocation. Use chloroform as an anesthetic, and avoid the infliction of long-continued pain. Especial care should be taken to prevent loss of blood or body heat. Dressings should be carefully watched and changed as often as soiled. Usually no attempt should be made to keep the child in bed, but, from the first, it should be permitted to lie on the mother's lap or be carried about in her arms.

The period from the fifth to the fifteenth year is the golden age of surgery. Here the mortality is least, and the results best from operations of almost every kind. This is due to the fact that metabolic processes are active and resistance to infection vigorous; that the various organs of the body are normal and perform their functions satisfactorily; that the nervous system is stable and uninfluenced by regrets for the past or fears for the future; and, finally, that the reason and will have developed sufficiently for the surgeon to secure the acquiescence and co-operation of the patient.

Between the twentieth and fortieth years the mortality of operations greatly increases. This is due to sexual development, attended by the possibility of excesses, abnormalities and diseases; also to the cares and responsibilities of maturity, often leading to neurasthenia from excessive work and worry. And, finally, there may be superadded the injurious results of addiction to tobacco, whiskey or opium.

After forty, the mortality from operations is nearly three times greater than in patients under twenty. As a rule, old people are severely shocked by loss of blood or body heat; their wounds heal slowly, and their tissues have little power to resist infection. They are headstrong and rebellious, and intolerant to confinement. Their organs of assimilation and excretion are impaired, and their stomachs and kidneys liable to break down. Taken all in all, old age is a greater bar to surgery than any other complication, unless it be chronic alcoholism. It must be remembered, however, that senility is not measured in years. Surgically

speaking, a man is as old as his arteries. In impressing this point, Sir James Paget says:

"They that are fat and bloated, flabby of texture, torpid, wheezy and incapable of exercise, looking older than their years, are very bad.

"They that are fat, florid and plethoric, firm-skinned and with good muscular power, clear-headed and willing to work like younger men, are not, indeed, good subjects for operations, but they are scarcely bad.

"The old people that are thin and dry and tough, clear-voiced and bright-eyed, with good stomachs and strong wills, muscular and active, are not bad: they bear all but the largest operations very well."

The brilliant results of Young and others in operating on old men for prostatic enlargement, show that modern surgery, with its short period of anesthesia, diminished loss of blood, freedom from infection, and provision for adequate drainage, has made it safe to do operations on the aged which, only a short time ago, would have been unjustifiable.

Sex—Other things being equal, women bear operations better than men. This is due to the fact that they are designed for maternity and are naturally endowed with more passive endurance; that they are more confiding and trustful, and place greater confidence in the assurances of the surgeon; that they are more tolerant to confinement to bed, because they are not accustomed to active outdoor life; and, finally, they are more temperate and regular in their lives, and not as frequently the victim of excesses in food and drink.

On the other hand, menstruation, pregnancy, lactation and the phenomena of the menopause give to the sex the possibility of complications to which the male is not subject. As a rule, operations should be avoided during menstruation, as the period is frequently attended with nervous and digestive disturbances. The time of election, especially in gynecological work, is the two weeks between the completion of one period and beginning of the next. In emergencies, however, an operation may be done during menstruation without misgivings, as usually no ill effects result.

It is also undesirable to do an operation during pregnancy, as it entails the possibility of miscarriage. The danger is more theoretical than real, however, as hundreds of abdominal sections have been done on pregnant women,

for appendicitis, or other abdominal diseases, without interference with gestation.

It is also inadvisable to operate during lactation, because the woman's strength and resistance are below par, and if she continues to nurse the child, she will have an undue tax upon her, while if she ceases to do so, there will be the danger of trouble with her breast.

Race—The influence of race on the result of an operation is a question of interest, but not of great practical value. It is stated that a Chinaman makes the best patient on earth. In America, especially in the Southern States, there is good opportunity to contrast the respective resistance of the Caucasian and the Negro. Surgeons of large experience in operating on both races are practically unanimous in the opinion that the black man is a better subject than the white man. This does not apply to the mulatto, for he follows the rule of the mongrel, and has the vices of both parents and the virtues of neither. It is obvious even in the life of an individual that the pure negro is losing the immunity formerly enjoyed to certain diseases, and is developing predispositions which render him a less favorable subject for operation. Before the Civil War, insanity was almost unknown in the race; tuberculosis was not common; and venereal diseases of rare occurrence. With civilization, education and syphilization, he is now the victim of various nervous disorders; with unhygienic surroundings and scant clothing, he is a frequent victim of the great White Plague; and with improper food, eaten at irregular intervals, his digestion has become impaired, and he is suffering more and more frequently from gallstones, appendicitis and diseases of the kidneys. The day will come when the degeneration of the whole race will have reached a point to make it an accepted fact that they are poor subjects for surgical work.

Vigor and Weakness—Paradoxical as it may sound, the strong, robust man frequently does not make as good a surgical patient as one who is feeble and wasted by disease. He may have huge limbs and mighty strength; he may never have had an illness in his life, and boast of the constitution of an ox, but he is a poor subject for the surgeon's knife. He is accustomed to fresh air and an active life; his blood vessels are full and oxygenation of the tissues is rapid. His food has been large in quantity and

gross in quality. When misfortune overtakes him, there is no time to accommodate himself to new conditions, and the whole habit of his life is suddenly changed. To this is added the shock of his accident, the horror of an operation, and the dread of the future. Just the contrary is true with the chronic invalid, who has been acclimated to bed life by long weeks of invalidism, whose circulation, respiration and digestion have become adjusted to his condition, and who has been brought to view the approaching operation as a means of relief of pain and restoration to health. Of the two types described, the last will be well first.

Obesity—As a rule a fat patient is a bad patient. If the obesity is hereditary and the general health good, it is not as bad as when the fat is due to gluttony, indolence or beer-drinking. An obese patient is an elephant on your hands. He usually breathes with difficulty and cannot assume a recumbent position. It is hard to move him in bed, and difficult to prevent the formation of bed-sores. The skin is usually thin from pressure, and its edges difficult to approximate. The subcutaneous fat has little vitality and readily breaks down and liquefies. Infection once taking place, pus burrows far and wide, and is drained with great difficulty. Sometimes such patients die suddenly from fat embolism; again they become exhausted and prove an easy victim to intercurrent diseases. If recovery takes place, convalescence is always tedious and prolonged.

Alcoholism—The most unpromising patient who ever comes to a surgeon is the chronic alcoholic. Constant drinkers who are never drunk, and yet who are never sober, are worse subjects than those who get on periodicsprees. The gravity of the risk in the individual case will depend on the length of time the individual has taken stimulants; the average amount consumed daily; the presence or absence of tremor of the hand or alteration of the knee-jerk; the existence of gastritis, as indicated by anorexia, nausea or vomiting; and the condition of the liver, kidneys, heart and blood vessels. No operation except the most imperative should be done on the alcoholic, because of the danger of the administration of the anesthetic, because of the depraved condition of the tissues and consequent lack of resistance to infection, because of the liability of the kidneys to stall or the heart to run away, and because of the danger

of the development of wild and uncontrollable delirium. When an operation is unavoidable, but not immediately necessary, the patient should be prepared for it by cutting down or withdrawing the stimulant. When an immediate operation is necessary, it is better to continue the alcohol until the period of greatest danger is past.

Affections of the Nervous System—Hysterical patients usually give a great deal of trouble before the operation, but do very well after the ordeal is over. A nervous woman who wishes to tell of the unfortunate surgical experience of her friends, who desires to discuss every step and detail of her own operation and tell how she wishes her case managed, and who is possessed of exaggerated fears as to the complications which may develop or the ultimate result which may follow, usually, after the operation, becomes a model patient. Her imagination enters upon fresh fields and she becomes hopeful and courageous, and at once begins to plan a new life of activity.

The neurasthenic, however, is a different proposition, and woe betide the incautious surgeon who operates on one. Occasionally neurasthenia may be due to chronic appendicitis, uterine displacement, or some other cause which can be corrected, and the patient cured. But in a large majority of cases the neurasthenia is due to a disturbance of the general body nutrition, and no operation will prove of benefit. The victim of neurasthenia wears out the patience of family and friends, and in order to secure a sympathetic listener, and in order to demonstrate to the community the serious nature of his disease, he goes from surgeon to surgeon and from hospital to hospital, offering himself as a bloody sacrifice to his curious form of egotism, and glorying in his martyrdom. Surgery does this class of patients no good, but simply deepens, rather than relieves, the neurasthenia.

The insane are usually good subjects for surgical operation. The regular life of an asylum is conducive to good health, and the absence of mental anxiety on the part of the patient is a favorable factor. Mayo, who has done a great deal of work on this class of cases, states that they are entitled to just the same surgical treatment as the sane—no more, no less. In other words, insane people should be operated on to relieve them of hernia, gall-

stones and abdominal tumors, but hernia, gallstones and abdominal tumors should not be operated on to cure the patient of insanity.

Constitutional Diseases.

Rickets is a condition of bony malnutrition. If the general health is good, wounds heal as well in rickety subjects as in other cases.

Syphilis does not usually increase the risk of a surgical operation. Wounds made during the full bloom and blossom of the secondary stage heal kindly, and operations done on tertiary lesions usually do well. The danger in operating in the early stages of syphilis is rather one to the surgeon than to the patient, as the blood is infectious.

Gout has no effect upon the result of an operation, unless it has existed sufficiently long to produce cardiac or renal changes. It is, of course, not wise to operate during an acute attack of the disease, and it must also be remembered that an operation sometimes precipitates an attack in a person predisposed to the disease.

Hemophilia contraindicates a surgical operation, unless urgent and required to save life. Fortunately the subjects of hemophilia do not always bleed. A case is in mind where a man was brought to the hospital with gangrenous appendicitis, and who gave a history of having suffered repeatedly from almost fatal hemorrhage after trivial injuries. After consultation, a section was determined on as the only hope for life. It was performed with less than the usual loss of blood.

Malaria and an injury or operation have a reciprocal relation one with the other. Malaria may cause pain, hemorrhage or inflammatory changes at the site of injury, which assume an intermittent type and yield to administration of quinine. Again, an injury or operation inflicted on a person the victim of malaria may markedly aggravate the disease, or induce a fresh onset of ague; or again, it will make active symptoms in a person who is not known to be infected.

Diabetes is an almost positive contraindication to an operation, as the tissues of a diabetic patient possess little power of regeneration, and have so little resistance to infection that inflammation, suppuration and gangrene are almost certain to develop. Surgery on diabetics should only be done when most imperatively demanded, as often when the sugar in the urine

has been decreased to an insignificant amount by weeks of dietetic treatment, it will reappear in large quantities immediately after the operation, and the patient die in diabetic coma.

Visceral Disorders Cardiac and Vascular Diseases.

Valvular disease of the heart is believed by the laity and by most of the profession, to add greatly to the risk of the anesthetic and to the danger of death from complications following the operation. This does not seem substantiated by facts, as but a small proportion of the patients who die from chloroform or ether are found to have been the victim of organic heart disease, and as far as convalescence after the operation goes, patients with heart trouble are usually markedly improved by the enforced rest and confinement to bed. A dilated or fatty heart is much more to be feared than one with valvular lesion, especially if there be adequate compensation.

Atheroma of the arteries was formerly thought to predispose to secondary hemorrhage, but in modern practice this complication is rarely, if ever, seen. The complication to be most dreaded from diseases of the arteries is gangrene due to lack of nutrition of the tissues to which they are distributed.

Renal Diseases.

It was formerly thought that the presence of albumen or casts in the urine indicated grave organic change in the kidney, and was a bar to surgery. This may have been the case with the crude tests of the older pathologists, but it is certainly not so to-day, for the modern laboratory man finds albumen and casts in practically every specimen submitted to him. Dr. Osler has emphasized this in a recent article entitled, "The Advantages of Having a Few Casts in the Urine After a Man Reaches Sixty Years of Age." Certain forms of nephritis, however, add greatly to the danger of an operation, and all surgeons occasionally lose patients from suppression of urine, followed by uremic convulsions. No operation of election should be done on a patient suffering with advanced Bright's, and when the urgency of the case is such that an operation has to be done, the patient should be carefully prepared by dietetic and eliminative treatment before the operation, and the kidneys kept active afterwards by

the use of spartein and the administration of large quantities of water by mouth or rectum.

Respiratory Tract.

Bronchitis, pneumonitis and phthisis pulmonalis are serious bars to surgery, inasmuch as they make the administration of the anesthetic difficult and dangerous, and complicate the after-treatment by coughing, embarrassed breathing and imperfect oxygenation. In acute inflammation of the lungs, operations should be postponed, and in chronic trouble, they should not be done except to meet most urgent indications.

Alimentary Tract.

Gastric dyspepsia, intestinal indigestion, diarrhea and constipation are all conditions to be corrected prior to an operation. The prognosis is bad when to the toxins of disease, is added the poison produced by putrefaction of gastric and intestinal contents. In correcting the conditions named, food should be sterilized, the mouth should be repeatedly disinfected, the stomach should be washed out, and intestinal antiseptics, together with purgatives, should be judiciously administered.

In disease of the liver, especially when the patient is jaundiced, the danger of hemorrhage should be determined by testing the coagulability of the blood, and, except in cases of greatest urgency, operations should be postponed until the cholemia subsides or until, by the administration of calcium chloride or other drug, the danger of uncontrollable bleeding be removed.

Diseases of the Blood.

Anemia, or a deficiency of either hemoglobin or red blood cells, is often a contraindication to an operation. Mikulicz states that a hemoglobin percentage below thirty, or a red blood count below 3,500,000 should postpone operative intervention until the blood is enriched by medical treatment. While this is a safe rule to follow, it has its exceptions. The lives of women have often been saved by hysterectomies, whose blood findings were below this minimum owing to profuse and uncontrollable uterine hemorrhage.

Leucocytosis, or increase in the polymorphonuclear leucocytes, especially when progressive, indicates advancing suppuration and demands early operation.

Leucocythemia, or an excess of mononuclear leucocytes, contraindicates all operations, as the patients invariably die after removal of the spleen, and stand in great peril after more trivial procedures from hemorrhage, infection and other complications.

Editorial.

Col. W. C. Gorgas, Medical Corps, U. S. A.

The *Scientific American* for June 27, 1908, in an editorial entitled, "Brilliant Medical Work of Col. Gorgas at Panama," says: "It is not stretching the limits of praise too far to say that the most brilliant success achieved at Panama is to be credited to the work done by the Army Medical Corps, under Col. W. C. Gorgas, in the extermination of yellow fever and malaria, and the betterment of the general sanitary conditions. When the medical corps took charge, the Panama Canal had become synonymous with disease and death; but to-day, thanks to the system introduced by the medical corps, the zone of operations is as healthful as the average in the United States."

It is interesting to note in this connection, that Col Gorgas, who was elected President of the American Medical Association at its recent meeting in Chicago, is a Southern man, having been born in Mobile, Ala., in 1854, and his father, at one time a general in the U. S. army, resigned in 1861, to come South, where he became Chief of Ordinance of the Confederate States.

Col. Gorgas was health officer of Havana during the occupation of Cuba by the U. S. troops from 1898 to 1902, and it was while in this position that the Medical Board, U. S. A., the chairman of which was Dr. Reed, also a Southerner—a Virginian—made the discovery that yellow fever was transmitted only by a certain species of mosquito.

The New Virginia State Board of Health.

Met at its headquarters, 1110 Capitol Street, Richmond, Va., July 1, 1908, for purposes of organization, and to discuss general plans of procedure under the new law. Dr. Rawley W. Martin, of Lynchburg, was elected President, while Dr. Charles R. Grandy, of Norfolk, Va., was made Secretary of the Board. Dr. Ennion G. Williams, the Chief Health Commissioner,

has associated with himself as Assistant Health Commissioner, Dr. Allen W. Freeman, formerly Medical Inspector of Richmond, and Dr. Meade Ferguson, of Blacksburg, will be State Bacteriologist.

The Richmond Board of Health.

At its session June 29, 1908, re-elected Dr. E. C. Levy to the position of Chief Health Officer, and Dr. K. S. Blackwell as Bacteriologist. Dr. W. Brownley Foster was elected Medical Inspector, to succeed Dr. Freeman, who becomes Assistant Chief Health Commissioner with the State Board of Health.

The North Carolina Medical Society

Met at Winston-Salem, N. C., June 16-18, 1908. The President elected as nominated by the House of Delegates for the ensuing year was Dr. J. F. Highsmith, of Fayetteville, Asheville was selected for the next place of meeting. Several new members of the Medical Examining Board were elected. Of the 132 applications for license to practice medicine in North Carolina, only ninety-three were successful.

The Patrick Henry Medical Society

Met at Martinsville, Va., July 8, 1908. The following physicians were listed to read papers, as follows: Dr. H. M. Trout, Roanoke, Va., subject not announced; Dr. J. W. Simmons, Martinsville, Va, Laceration of the Perineum; Dr. C. H. Ross, Bassett, Va., Diarrhea; Dr. L. E. Fuller, Sandy Ridge, Va., Exophthalmic Goitre; Dr. R. S. Martin, Stuart, Va., Gynecology; Dr. W. W. Moore, Smith, N. C., Materia Medica; Dr. M. S. Martin, Stuart, Va., Surgery; and Dr. J. M. Shackleford, Martinsville, Va., The Patrick Henry Physician. The officers of the society are Drs. R. R. Lee, of Martinsville, and J. R. Perkins, of Spencer, Va., President and Secretary respectively.

Drs. George Ben Johnston and A. Murat Willis

Have formed a partnership for the practice of surgery and gynecology, with offices at 405 East Grace Street, Richmond, Va.

Dr. Thomas F. Staley,

Of Bristol, Va.-Tenn., will hereafter limit his practice to diseases of the eye, ear, nose and throat.

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Original Communications.

SOME ANOMALIES OF THE STIGMATA OF DEGENERACY.*

By MARC RAY HUGHES, M. D., St. Louis, Mo.
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University (Med. Dept.)—Professor of Criminal
Anthropology, Benton College of Law,
Associate Editor Alienist and Neu-
rologist, St. Louis, Mo.

In broaching the subject of Criminal Anthropology, or the study of the criminal being, we have many skeins to unravel and many twisted and bifurcated paths of a dark and dismal labyrinth to explore, where obstacles meet us at every turn—obstacles thrown and placed in our path by a people who have a misconception of the terms stigmata and degeneracy. When we think we have reached the last path in the great labyrinth that leads to success, we imagine we are at our journey's end and success has crowned our effort; but alas, there, just in front of our way in this dark path a shadow is cast, and the rays of the lamp reacheth not; a deep and yawning abyss presents itself ready to engulf our efforts and mock at us in doleful echoes as we are hurled helplessly down. The public, swayed by the misconception of the subject of degeneracy, lay in our paths the obstacles, and it is the deep and yawning chasm into which we seem helplessly to fall.

It is the unknowing, unreasoning, unthinking masses—people whose brains are not capable of original reason—that are led by a leader of equal mental stability and force, that are responsible for the condition of the country so far as crime-life is concerned. There are some, however, who deserve applause; though they are not of the multitude, they are of the class human in nature who are assisting the under-dog to a plane where it will be possible for him to earn an honest living and be of use to

his fellow beings. Prisoners are not handled as though they were flesh and blood, but as inanimate automatons, with an absolute conception of right and wrong as in a normal person. They are arrested, by ignorant police and beaten into subjection, and those blows upon the brain of an unstable neuropath or psychopath serve only to render the unfortunate human a more complete mental wreck and a burden on society for life. A man or woman lying in the doorway or on the sidewalk in the down-town district or that of the tenderloin, supposedly a "drunk," by this mental giant, the policeman, is kicked, cuffed and beaten, when in many cases the unfortunate is an epileptic or has some other brain lesion; and the roughness by which he is handled by the "strong arm of the law" renders him an object of pity whose place of refuge is the hospital and not the jail, to be brought before the magistrate to answer to a charge for a crime uncommitted.

If malformations, like blows upon the head, and toxins in the blood may modify character, we should look to find, as we do, variations of character in disease due to individualities of brain structure, both hereditary and acquired. Certain criminal acts are as much the result of diseased brains as other symptoms are the concomitants of other maladies. Malformation within the brain structure gives rise to these divisions, the insanities, criminal acts and other gross brain diseases, any one of which might run into the other—be a part of it or be dependent upon it; for instance, given a brain lesion: epilepsy and crime may be the resultants. Those familiar with this branch of science will readily see the philosophy of the foregoing statement. I mention epilepsy as it is well known. When it has developed far enough to involve to a certain degree the psychic centres, the resultant oftentimes is mania of homicidal character, and homicide is crime.

Insanity is curable in many forms; so also

*Read before the Mississippi Valley Medical Association, Columbus, Ohio, Oct. 8-10, 1907.

is crime in many individuals. To discuss the method that would tend to minimize criminal acts would take volumes, but I must mention in passing that the indeterminate sentence is one of the most important. I cannot do better than quote from my much esteemed friend and co-worker, William A. Hunter, late warden of the Anamosa State Penitentiary who, I regret to say, was taken away before the fruits of his energy had fully ripened, and whose death has been a loss to humanity in general. Together we had often discussed the good of the indeterminate sentence, and it is largely due to his efforts that some of the States now have that form of sentence.

In his report as chairman of the committee he says: "I must not enter into any exhaustive discussion of the Indeterminate Sentence, but briefly so far as it relates to prison discipline. The supreme and unanswerable argument for the indeterminate sentence is that it furnishes the criminal with the highest incentive for making character, and preserving order, while it furnishes the management the broadest opportunity to induce self-control on the part of the criminal. Under this method the court says to him, 'I commit you to prison until you are fitted to become a citizen.' The Warden says to him, 'You are here and here to remain until you are fitted to take your place once more in the ranks of society. That day so longed for by you is to be fixed by no court, set by no governor, and to be moved by no influence, but it will come near or far, determined only by your own volition. Your future is in your own hands.' The criminal says to himself, 'Here I am—for how long? The law says that my friends are helpless to shorten my term and no appeal to the Executive can abate my sentence. Sullen looks, stubborn manners, rebellious conduct will only move the date farther down the calendar. There is only one thing which can influence the setting of that red letter day, and that is my own conduct.' You have enlisted his co-operation. All the internal man goes out to meet your external effort. What co-operation and profit-sharing is to the factory in promoting industry, order and production, the indeterminate sentence is to the prison. No greater crime against society could be committed than to turn loose a man who has been adjudged unfit to be at liberty; no matter

whether he has been in prison for one year or for life. No greater injury could be done the man himself than to give him the hope that he can be released until he has squared his conduct with the moral law. Let the star of hope be inexorably kept shining over the pathway of virtue, but let it be as inexorably blotted out over the pathway of vice.

"A system of marks which classifies prisoners into grades, combined with the parole and indeterminate sentence enables you to teach the criminal the most valuable lesson for citizenship that he is likely to learn; and that is, that it pays to do right—thus creating a powerful leverage for the regulation of human conduct. In the world from which he came the proverb that honesty is the best policy is at a discount. We must, in all fairness, admit that he is not to be severely blamed for this estimate of the economic value of righteousness. In the short run (and the criminal always lives in the short run) he has observed that trickery, dishonesty and thievery pay pretty good dividends, and he comes to the conclusion that dishonesty is the best policy and that the Ten Commandments are out of date—who shall deny him the logic of the situation? He does not know that in the long run justice is always swifter than the feet of wrong, and that history holds no criminal of yesterday who is not in the grip of remorse and reprobation to-day. He does not live in the long run—but from hand to mouth. Now he must learn that goodness pays, and that honesty is a good investment.

"Under the indeterminate system, he sees his credit and debit marks piling up and sees the day of his emancipation shifting back and forth on the calendar, rising and falling in the gauge, registering accurately his progress in vice or virtue. The lesson that it pays to do right, the hardest of all lessons to teach children and harder still to teach men, is written before him night and day. It is inexorable, irrevocable. Admitting that often the sleekest criminal, the shrewdest and perhaps even the greatest will escape through the meshes of the indeterminate sentence, can it be denied that it quite often happens under the present regime? But even though the Indeterminate Sentence be imperfect, we contend that it is still infinitely better for the criminal; for under this system he follows the path of virtue, sobriety, law, and good

order; he wears himself into a certain rut; the path he treads becomes a habit to him and habits are not thrown off in a day or in a month. The habit of observing good order and looking upon right as having a real and practical value cannot be easily shaken off; it is to have a grip on him which it never had before. Constant repetition cannot help making a habit, which, though it may be thrown off, to be sure, is also subject to the possibility of becoming automatic. We have just as good a right to consult our hopes as our fears and to presume upon the good as upon the bad.

"If outside influence touches the indeterminate sentence plan with as much as its little finger, the whole scheme is lost; but we must admit that influence (political or otherwise) could not interfere more than it does under the definite sentence plan. If prisons are to do their required work in making men and creating character, the State should employ the very best penologists possible, regardless of expense, give them an absolute, free hand and allow neither friends nor politicians, nor executive clemency to interfere, or the whole system is demoralized and the fruits of true discipline lost."

There must be two great divisions of crime, just as in lesions of the brain, namely organic and inorganic or functional—the inorganic representing the volitional criminal, whether inherited or acquired; the organic representing the habitual moral imbecile, incorrigible and insane criminal; therefore, on the one hand certain forms of criminals are as incurable as certain other forms of mental disease. To say that a child born of criminal parents must be a criminal is preposterous; environment and discipline will dispel the inherited predisposition to crime, just as proper management will eradicate the predisposition to further unstableness that a child inherits from neuropathic or psychopathic parents. Given a child born of criminal parents: Take him from their influence and from criminal environment, direct his thoughts in the proper channels, the brain will begin to develop normally; he will acquire the habits of his environment and a normal being will be the result. The longer the criminal infant remains and is allowed to grow in an atmosphere of crime, the more imperfect becomes the brain formation and the harder it is

to arrest his criminal tendencies. If allowed to run on, he finally becomes an instinctive criminal. The angles of the face and head show the equivalent of brain strength.

In making anthropometric measurements, race idiosyncracies must be taken into consideration. Those races that have an index, separate to themselves, such as the Indians, negroes, and those whose indices must not be classified as belonging to the anomalies when it falls below or above the scale as in comparison with the anomalies of others showing other stigmata.

To give all of the anomalies of the stigmata of degeneracy would be going too much into detail, but suffice it to say that the measurements of the head and face are the first in importance of all the anthropometric measurements; then the ears, eyes, teeth, hard palate, skin and other anomalies of the general organism, too numerous to mention here. Every author and worker in criminal anthropology knows that it takes a number of anomalies to form the stigmata of degeneracy. Many people who are not familiar with the anthropology of the criminal or insane variety are prone to say that everyone is a criminal according to the anthropologist, but some day they will recognize the fact that no normal individual has a whole series of anomalies of the stigmata of degeneracy, as are found among the insane and criminal.

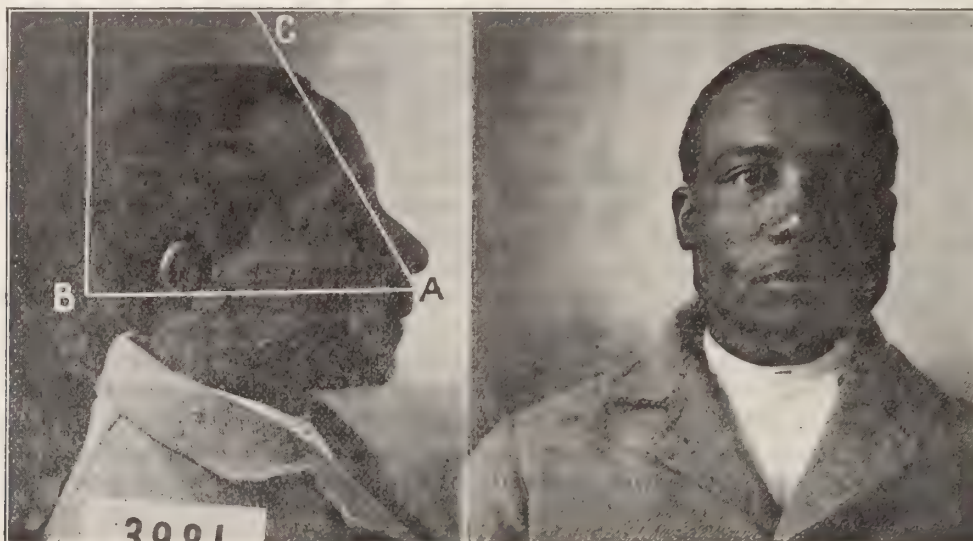
One other point in favor of the indeterminate sentence if it ever supplants capital punishment, and that is the legal murder of those unfortunates who are not mentally able to control their impulses. Dr. Havelock Ellis says in his treatise on Anthropology, *The Criminal*; "A very large number of crimes are committed by persons who are impelled by delusions or who have before the commission of the crime been in a condition of mental alienation. Nearly a hundred persons every year in this country are sent to prison to be found insane on admission. The hanging of persons who are afterwards generally regarded as insane has been and is still frequently carried on. In Germany Dr. Richter has shown that out of 144 lunatics who were, as was afterwards shown at the date of crimes in the highest degree insane, only 38 were recognized as insane by the judge; i. e., 106 madmen were, on account of their madness, condemned to severe punishment. Out

of 100 insane persons brought to the bar of justice, only 26 to 28 are recognized as insane." Sander & Richter (*Die Beziehungen Zwischen Geistesstörung und Verbrechen*).

If criminals were examined as to their sanity by anthropometric measurements alone, before they were brought before the bar, that grave mistake would not be made. A judge's power

as the commitment is, in reference to the insane; the judge can commit to an asylum, but he cannot determine the duration of the commitment.

The two photographs speak for themselves, inmates of the Animosa Penitentiary. Have they not the marks of degeneracy? Judge for yourself. I have drawn the two facial



should rest at commitment; but as to duration, that is beyond him and should be left wholly in the hands of officers of the penitentiary, just

angles so that you may see an easy method of determining the facial angles of degenerates. A simple measurement, and with a little knowl-

edge of geometry, we are enabled to ascertain correctly their deficiencies. The angle is measured and worked by this formula:

Cosine, $\frac{\text{Side Adjacent}}{\text{Hypotenuse}}$. You have given in one figure, Hypotenuse and side adjacent, to find the degree of the angle C. Supposing the line B C measured 15 inches, and the line A C measured 1 inches, then your angle worked out would read:

Cosine C. $\frac{\text{Angle A}}{H} = \frac{10}{15} = .66668$ which is the Cosine C, and the angle looked for would be 48 degrees, 48 minutes. If the other angle is wanted, the formula is reversed. All of the anomalies have an index and can be worked out and proven. The other figure shows method of drawing for ascertaining both facial angles as are worked by the formulæ above given.

To give the methods of measuring anthropometrically, the other anomalies must be deferred to a future time; but in conclusion let me add that the work of an anthropologist is that of befriending the criminal, and removing the conditions that have placed him or her in their present position, and elevating them to a place where they will be enabled to mingle once more with society, and be given a chance to at least earn a living. "Once a criminal, always a criminal," is the everlasting cry of the people who imagine themselves above every one else, and cultured to the highest degree; because they have enough to live on, and possibly some more, they do not think others less fortunate than themselves have a right to live, much less walk the streets in freedom. They are selfish to the very core, and think not of any one but themselves; and to hire even as a servant to do the most menial labor would be to their little minds a thing preposterous. If these pseudo-wise ones were as wise as they think, they would discharge from their employ some of their "trusted servants" and take in the one who frankly says, when he applies for work, "I have just come from the penitentiary," because it is the novice and first offender that will own his guilt; but the third and fourth term criminal will deny it every time, though sooner or later it is found out. No one knows why each individual has committed his respective crime, until his story is told, and no one believes it when it is told—notwithstanding every word of

it is true—simply because he has at one time been in the penitentiary. If in many instances the first offenders were given a show when released, the chances are that there would be no third or fourth term convicts. The first offenders come back into the world. They seek employment. They go to a prospective employer with head bent, like a cowed dog. "Convict" is stamped all over them, and an observant person can, with little difficulty see it. During the conversation between the prospective employer and employee, the first offender will say he has been in the penitentiary. That word seals his fate. He goes from place to place to be greeted with the same response to his plea, until driven to it by sheer hunger and want, the miserable soul commits a second crime. This time he is sentenced, but he does not come forth again as a first offender who is supple and can be swayed by proper environment, but as one impregnated with the atmosphere of crime, and determined to do bigger jobs, believing he has had sufficient schooling in the art, acquired in the school for crime, where the inmates rehearse to their fellow convicts the proper way to blow a safe, or break into a house, leaving no tracks behind. Shall we call the penitentiary a school for crime? Judge for yourself. These are the facts, and many more incidents in the life of a criminal are at my command. This is truth, not fiction.

POST-OPERATIVE ILEUS.

By I. S. STONE, M. D., Washington, D. C.

Definition. The name post-operative ileus should be limited in its application. It is intended to cover such cases of bowel obstruction as occur after abdominal section for any purpose whatsoever. In a few cases, acute bowel obstruction results from anesthesia, or acute illness, such as pneumonia, (causing acute dilatation of the stomach, etc.). But, for our present purpose, we shall limit it to those cases which occur unexpectedly, or when operations have not involved the lumen of the bowel, or when there was no suspicion of such involvement. Neither should acute general peritonitis which causes obstruction, be considered ileus, for the toxemia of the former often causes death before obstruction results, and always independently of the intestinal contents, which may later prove toxic in ileus.

We have had in all, six fatal cases of ileus in our surgical experience. One was due to an adhesion of a loop of ileum to an infected uterine cornua. Another to the escape of a loop of ileum through an abdominal incision, causing strangulation. A third was due to long adherent appendix. A fourth to compression of a loop of ileum between the pelvic brim and the sigmoid, and a large pregnant uterus. (The operation was a myomectomy during the sixth month of pregnancy). The fifth was due to an unsuspected intestinal stenosis, and a sixth to pelvic adhesions in an infected peritoneum after a "bad pus case."

It may be pardonable to mention here that only one fatal case has occurred in the past ten years. Two of the fatal cases were operated upon a second time without benefit. During the period of time mentioned we have operated upon two with success. Our last seriously ill patient had an angulation of the sigmoid after a hysterectomy. She also had acute dilatation of the stomach, and we were obliged to reopen the wound on the fifth day—fortunately being able to quickly locate and overcome the obstruction.

Prevention. We are not alone in thinking that shock, exhaustion, evisceration, etc., are the customary contributing causes of ileus. In fact we know of no better prescription for the production of ileus than to cause excessive purgation before operation; to make an evisceration and a prolonged operation which includes some handling of the viscera, and finally to begin promptly to purge the patient after operation. Many crimes have been committed in the name of surgery, but to our thinking, the old plan of giving purgatives immediately after abdominal operations is the most infamous. Our custom is to induce free peristalsis on the second or third day after operation from the rectal end of the intestinal tract before giving any purgative whatever. Frequently our patients leave the hospital without having had a single dose of calomel, salts, or any purgative given by the mouth.

Every one knows, or should know, all that is to be said about the importance of covering raw surfaces with peritoneum. We add that all muscular surfaces, as between denuded bowel and infected or denuded uterus, will permanently adhere. It is also important to remember that destruction of the peritoneal glands and epithelium may cause a permanent adhesion.

It is not generally understood that the peritoneal glands promote peristalsis by their secretion of serum, which acts as a lubricant at the proper time. Peristalsis usually begins during the second twenty-four hours after operation, and it is probable that the peritoneal glands have begun their work a little before this moment.

Finally, we call attention to the importance of returning the intestines to their normal position within the abdomen, and we further insist that *angulation* should be anticipated and avoided. Angulation undoubtedly has to do with much of the distress experienced by our patients which simulates, and may be a forerunner of the so-called cases of adynamic ileus. We have never had a case of either dynamic or adynamic ileus in our experience. (Two were seen in consultation, in which we saw no cause for the obstruction.) It is therefore pardonable if we declare that there is some doubt about the existence of these cases. There may be a paralysis of any part of the body after operation, as at any other time, but the rarity of such symptoms proves the assertion above made to be the rule.

Angulation of the colon at either flexure, or similar deviation of the sigmoid from its usual position does explain some of the meteorism and other distressing symptoms often seen after operation, and it should be our constant effort to prevent such occurrences. The usual traction upon the omentum before closing the incision is a possible cause of kink of the transverse colon, which ought to be avoided. In certain instances we have placed a suture in the omentum over the transverse colon so as to hold it in its normal position. (We had this hint from the Mayos and thank them for it.) The sigmoid frequently falls forward and to the right and needs attention in order that kinking or angulation may not prove obstructive. (Our last post-operative case of ileus was due to this cause, and was recently reported to our local medical society. The patient recovered.) The observance of these defects of position of the viscera and their correction has done much to relieve our patients of acute nausea and vomiting after operation, besides contributing to their general comfort. We have no longer what may be called *ileophobia*; for we have results which guarantee our independence of the former spectre which nearly every one was taught to dread.

Stoneleigh Court.

SOME PERSONAL EXPERIENCES AND OBSERVATIONS ON HERNIA AND HERNIOTOMY.*

By ROBERT C. BRYAN, M. D., Richmond, Va.

Professor Descriptive Anatomy and Genito-Urinary Surgery, University College of Medicine, Richmond, Va.; Visiting Surgeon to Virginia Hospital, etc.

Hernia is a relatively common disease. The proportion in males is one in 14.9 and females one in 44.7. Quite a large percentage of cases are seen for the first time in childhood. It comes on again in later years when the belly wall becomes atonic and weakened, the minimum number being observed about 15 years. It is not the writer's intention to take up the many details of this condition but simply to mention hurriedly some personal observations which he has deducted from a fair number of cases which have sought surgical relief.

The greatest predisposing factor for the cause of hernia in the male is the escape of the spermatic cord along the inguinal canal. This cord transfixes the abdominal parietes as a skewer, on the bias, obliquely, downward and inward so that the canal receives more protection from within, the further along its course it proceeds. It is in the working class essentially that hernia is found—in that class who are subject to heavy manual labor, although quite a fair percentage of cases is observed in those of sedentary lives. It is on the right side also that the largest percentage of cases occur. 84 per cent. of all cases are inguinal; 10 per cent. are femoral; 5 per cent. are umbilical and the other 1 per cent. constitute the rare condition of obturator, ischiatic, diaphragmatic hernia, etc. 34 per cent. of all hernia, according to Kingdon, are congenital, and according to Goldner 53 per cent. It is on the left side that varicocele occurs and on the right side hernia. The writer wishes to call attention to muscular effort as the predisposing factor for these two conditions.

It is the right hand that probably 90 per cent. of all classes use for carrying burdens and violent exercise. To counteract this tonic contraction of the right upper extremity there is a corresponding contraction of the left abdominal muscles which chokes off the returning spermatic flow and thereby, causing stasis, predisposes to varicocele. With this contraction

of the left side there is a relaxation of the left lower flank. The diaphragm depressed by muscular effort displaces in turn the intestines downward, the internal ring does not receive full force of the displacement, but being in its axis line, the transverse fibres of the internal oblique and transversalis muscles give way, allowing a pocketing or bulging of the canal at this point, and so hernia is inaugurated. That uncomfortable feeling, which at times may be even a little sickening, in the lower abdomen, which is experienced while lifting heavy weights is due to the stretching of the peritoneum and traction upon the mesentery, and not to muscular effort as is commonly supposed, for muscular effort is always physiologic.

What influences the development of the right iliacus and psoas muscle may have over that of the left side seems rather theoretical; however the caput coli and the appendix placed as they are, and with the mesenteric attachment of the intestines coming from the upper left hypochondriac to the right lumbar regions, tends to throw the largest part of the intestinal tract in this quadrant; hence the increased intra-abdominal pressure by the viscera in this location. Such are the causes from within and muscular effort. From without, there may be traction diverticulæ, replacement fibrosis, small fatty pads along the inguinal canal, inguinal glands, which having undergone a peradenitis, lymph bands become organized and act as a director or delicate wire along which the impulse may travel.

The writer does not believe that there has ever been invented or devised a truss suitable for all hernia under the many exigencies and demands which are thrown upon it by the patient. Change in altitude, in weight, in muscular effort, in intra abdominal pressure and tension, influence and disturb the truss from performing the duties for which it was designed. Only recently the writer had under observation a patient who had a large, reducible, complete, indirect, inguinal hernia on the right side. He had been wearing a truss for 12 years simply because he was "accustomed to it." It did not hold the intestines back and was usually worn over the escaped intestines. Trusses are uncleanly, unreliable and, exerting as they do in different attitudes of the patient

*Read during the session of Northern Neck Medical Association, Colonial Beach, Va., June 18, 1908.

unequal pressure, tend to induration of the surrounding tissues, inguinal adenitis and dangers to the cord, but are, however, to be recommended and advised in selected cases—as for instance in the umbilical hernia in infants when a small hard ivory or hard rubber pad may be applied under adhesive plaster and cures 80 or 90 per cent. of all instances. Also in those atonic old belly walls in which the constitution of the patient would not allow of superlative surgical measures, mechanical measures have necessarily to be enjoined.

It was Bassini who first devised a satisfactory operation for the surgical relief of this condition. Halstead, Ferguson, Kocher all have their modifications of this primary operation but in the writer's opinion none of them are as good. A thorough anatomical familiarity with the structures in this region is indispensable for the satisfactory relief of the condition. Tissues which have been insulted by dislodgment from within, and mechanical disturbances and disruption from without, do not present the anatomical relationship which is so graphically depicted in the text-books. The sac may be so thin as to be mistaken for the cremasteric fascia, and again, so hypertrophied and thick as to simulate, as in one instance which the writer recalls, a strangulated, indirect, inguinal hernia. The tumor in this instance was as large as one's fist, tense, painful and irreducible; on operation it proved to be only a very large hypertrophied and thickened sac, which, by gradually filling up, had displaced and returned the intestines to the abdominal cavity. It is claimed that 7.5 per cent. of the cases operated on recur, (1 per cent. according to Coley). This, we must recall, is the statistics which are gathered as a result of all operators and all operations, and hardly does justice to a measure which deserves a better record in the hands of those who are qualified to do this major operation.

It is stated that only 67 per cent. of hernia due to violence appear immediately after the accident. This shows what an overwhelmingly large per cent. insidiously occur. The longest part of the mesentery is about 10 inches above the ileo-cecal valve, and it is practically the same and always the same knuckle of gut which constantly tapping at the internal ring finally gains entrance along the canal. The patency

and width of the external ring has nothing to do with inviting hernia. It is a well known fact that many of the Russian peasants tear at the external opening and dilate the canal with their fingers thereby hoping to cause hernia and thus avoid the army. Few of them accomplish what they desire.

Where the deep epigastric artery is located determines the location of the internal abdominal ring, and its proximity or distance from the abdominal wall forms a pocket more or less shallow which invites the prolapsed intestines to gather in this region. We are not considering congenital hernia or that patent type of canalicular peritoneal connection, of scrotum with the abdominal cavity, but some of the possible remote anatomical and physiological causes which may influence and predispose to the condition of hernia and that variety, the indirect inguinal, in particular.

All of the abdominal organs have been found in hernia. Englisch found that in 38 cases of ovarian hernia they were inflamed 17 times, cystic 5 times and cancerous once. This is directly analagous to ectopy of the testicle, which at times becomes malignant on being retained in the abdominal cavity. The writer has had only recently under observation a case in which there was a transverse colon, the entire omentum and the bladder in a large inguinal hernia of a female. Hernia of the bladder may be intraperitoneal, receiving peritoneal investment, or a genuine prolapse which is then extraperitoneal and consequently produces no sac.

As to treatment of hernia:—In those cases of old and atonic, flaccid, belly walls, the entire inguinal canal stretched to the size of a lemon, we can easily see the inability to retain the intestines in the abdominal cavity by means of mechanical devices applied externally. The writer now has under his care three such cases in which the patient wears a tight, snug-fitting suspensory giving support from below, and has discarded the use of his truss. Of the many operations devised for the relief of this condition the Bassini is probably the most desirable. Two or three points must be emphasized. Clean incision, as little bruising and tearing as possible, removal of all fatty and connective tissue along the course of the canal, for extraperitoneal lipoma in this region certainly predisposes to formation or hernæ; in approximating

the conjoined tendon and Poupart's ligament, it is not necessary to, in fact, better, to avoid, picking up the periosteum. The key note in the writer's mind is a tobacco-bag suture of the sac as high as possible, which is carefully inverted, and as close and as tight a suture of the internal ring, (with one suture above the cord) as is compatible with non-strangulation of the spermatic cord. Doing away with the internal ring means doing away with indirect inguinal hernia. For the deeper layers, it is advisable to use Kangaroo tendon or 40 day chromicized gut; silk is not desirable. The mortality from the operation according to some authors is one in 700, and according to others one per cent. At any rate, when we bear in mind that this prevalent pathological state in 95 per cent. of all instances can be durably cured with such a small percentage of deaths (1 in 700), we have the right and professional privilege to encourage, in the hands of a skillful operator, surgical intervention for the radical and permanent relief of a condition which is so triumphantly amenable to surgery.

The writer will take this opportunity to call attention to strangulated inguinal hernia. It is *primarily* an added knuckle of gut or tab of omentum, which, caught at the internal ring, prevents a return of the intestines into the abdominal cavity, and it is *secondarily* the edema and infiltration of blood and serum in the gut which further retards the relief of this condition. Forcible and powerful taxis cannot be too emphatically condemned, for further bruising and manipulating merely means more stasis, greater edema and consequently greater tendency to necrosis. Elevation of the hips, ice bags or heat, whichever is most grateful to the patient, are applied. This is done only to relieve edema. The finger may now be inserted in the rectum and in many instances the added knuckle of gut or tab of omentum may be shoved back from the internal ring, allowing an easy return of the intestine to the abdominal cavity. No great haste is required. In this instance, contrary to most surgical rules, the greatest damage and injury is done by the greatest haste and indiscreet manipulation. In strangulated femoral hernia, it is well to bear in mind the direction of the hernia, which is downward along the femoral canal, forward through the cribriform fascia, and then up-

ward over the fascia lata. Consequently when reducing a femoral hernia the course of our taxis should be at first downward, then backward, then upward. This is a practical point and should prove of value. The first part of the gut out is the last to return.

In conclusion, the writer would add a word about the operation under cocaine. In selected phlegmatic cases, who desire it, or in those instances where general narcosis is contraindicated by systemic lesions, local anesthesia is justifiably employed. The operation necessarily under these conditions takes longer, shock is sometimes profound, the embarrassment and apprehension of the patient are to be contended with, unknown, unexpected, and unfortunate complications and emergencies which may arise must be combatted with an indifference and accurate precision by the unperturbed operator—any one fact of which overbalances the beauty of the local anesthetic, "by telling the patient to cough so as to bring down the saque." In short it is a pretty piece of grandstand technique which the writer does not believe will stand the test of time.

SCARLET FEVER—REPORT OF A CASE DEVELOPING ACUTE NEPHRITIS, AND TREATED BY SPARTEIN SULPHATE.

By W. A. LEWIS, M. D., Enterprise, Ala.

I have had occasion to use spartein sulphate hypodermically after operating, with best results.

Recently I had a severe case of scarlet fever: girl four years and six months old. The ninth day, the patient began to improve and did very well for three days. On the twelfth day, found about three per cent. of albumin in urine; next day urine was scanty and contained fifteen or twenty per cent. albumin; patient very nervous and symptoms of uremic poisoning developing fast. Gave her one-fourth grain spartein sulphate hypodermically, repeated every four hours until three more doses were given; kidneys began to act freely and urine contained only about five per cent. of albumin; patient did fairly well for a few days. An inflammatory condition resembling erysipelas developed around the ears and spread over the face and head; the deeper tissues (subcutaneous) also were involved. Kidneys acted fairly well

nearly all the time; when any deficiency occurred I would give one-fourth grain of spartein sulphate. Generally one hypodermic would be sufficient, the albumin gradually decreasing to three per cent. On the twentieth day, the child died from exhaustion.

The use of spartein in this way, according to the authorities, was contraindicated, but I never observed any untoward symptoms from its use in this case. The nurse said about twenty minutes after the first dose there was a little irregular breathing for a few minutes; however, I attributed this to the nervous condition of the patient. I feel sure this case would have recovered if it had not been for the inflammatory condition of tissues of the face and head; and no doubt these symptoms were intensified by the accumulated waste products in the system. If the spartein had been given earlier and continued one or two or more doses each day, elimination would very likely have been thoroughly established and the complicating symptoms perhaps would not have appeared, or would have been lessened.

My observations in this case lead me to conclude that spartein sulphate given hypodermically in large doses in all cases of suppression of urine will result in good, and in many cases of acute nephritis where the urine is scanty and loaded with albumin the hypodermic administration of spartein sulphate in connection with the regular treatment for such diseases will help to re-establish the circulation and elimination by the kidneys, thereby saving life. Spartein sulphate should be given in large doses hypodermically: two grains to adults; children in proportion, repeated as needed.

DIAGNOSIS AND TREATMENT OF EMPYEMA.*

By M. E. NUCKOLS, M. D., Richmond, Va.

Lecturer on Operative and Minor Surgery, University College of Medicine.

The physical signs of a disease when it manifests itself in a typical way are usually characteristic, but since we see so few typical cases in practice, any diagnosis on physical signs alone must necessarily, in many cases, be faulty.

Pleuritic exudates, in the majority of cases, show as characteristic physical signs as any disease with which we have to deal; still there is no one sign, or combination of signs of empy-

ema on which we can absolutely rely. It is difficult, if not impossible, to distinguish certain forms of extensive infiltration of the lung from a large pleuritic exudate solely by the symptoms elicited by physical methods. This is obvious if the pneumonic condition, instead of giving the usual moderate dullness, produces an absolute flatness; if the breathing, instead of being bronchial, is very distant and almost inaudible or suppressed; if rales, increased fremitus and rusty sputum are absent; and if, added to this, as is frequently seen in children, old people and debilitated persons, onset is insidious with absence of chill and high fever.

On the other hand, diagnosis may be obscure if the pleuritic exudate is thin, purulent and moderate in amount, associated with or following pneumonia, and is accompanied by loud bronchial breathing and increased fremitus. This condition is not uncommon in children and young adults, and nothing but an exploratory puncture in one or more places, if one is not conclusive, located as far as possible by physical signs, will clear up the diagnosis.

After seeing cases of this sort go on from day to day, become weaker and more septic, and finally the prospect for ultimate cure of the empyema lost and the field for the development of tuberculosis fertilized, I wish to emphasize the importance, in fact, the necessity of early aspiration in all cases where there is an element of doubt.

With an aspirating needle or reasonably small trocar, and with proper technique, no harm can possibly result. In a few cases where the diagnosis was in doubt, I aspirated at several points and failed to find fluid, but found consolidated lung. Following this, the lung invariably showed signs of beginning resolution; so even in these cases good seemed to result from the aspiration. Whether this is brought about by depletion, as is supposed to occur in non-suppurative hepatitis following aspiration, or whether the increased trauma to the lung causes a reinforcement of the army leucocytes in this locality I am unable to say. Let it be from one or the other or some other cause, it seems to bring about this result. So I wish to repeat: Aspiration can do no harm and may do much good in cases of pneumonia terminating in supposed delayed resolution. In any case where there is an element of doubt, I would

*Read before the Richmond Academy of Medicine and Surgery, June 23, 1908.

say, "Aspirate early and aspirate often," thereby giving the patient a chance to live and get well.

Practically all the diseases from which we have to differentiate empyema may precede, be associated with or follow it; so the history must, of necessity, be an element of much importance in the differential diagnosis. In pneumonia, usually there is abrupt onset with chill, fever running continuously high, true dyspnea, and after several hours, dulness over the affected area, which is usually confined to one or more lobes and follows the lines of the fissures dividing these lobes, bronchial breathing and increased vocal fremitus. In empyema, there may be a chill or chills, and fever, which is usually of the septic type, some dyspnea though not marked except on exertion, flatness which, in small effusions, is highest near the spine, s-shaped in moderate effusions, being highest in axillary line and concave about in massive effusions; distant or absent breath sounds and distant or absent vocal fremitus over the flat area. Unfortunately, in so many cases, the two diseases are associated. Then, exploratory puncture will determine the presence of both or the presence or absence of either.

In tuberculosis, there is slower and more insidious onset; gradual loss of strength and flesh, little or no fever or subnormal temperature, little pain and little dyspnea, irregular distribution of areas of dulness, though more commonly in the apex of the lung. If sputum can be gotten, the presence of tubercle bacilli will be confirmatory. Here, again, both diseases may coexist, but on aspiration, the pus, if tubercular, is usually germ free; at any rate, pneumonococci, streptococci, colon bacilli and typhoid bacilli are absent. In non-tubercular empyema, one of these germs, at least, is present. Abscess of the liver and subphrenic abscess are frequently followed by empyema, and very rarely, empyema is followed by these diseases. Here, the history alone will determine the primary condition. In abscess of the liver, there is a history of previous gastrointestinal or pelvic trouble and chills; fever and sweats are more marked. The liver is enlarged upward or downward or both, and tenderness and crepitation over the liver is elicited if perihepatitis is present. Dulness alone is convex or level, differing markedly from fluid in the

pleura. A collection of fluid in the pleural cavity sufficiently large to displace the liver downward would compress the lung to such an extent as to exclude air entirely.

In subphrenic abscess there is a history of some acute intra-abdominal trouble: appendicitis, gastric ulcer, pancreatitis or gall-tract infection. The septic condition is more marked, and respiration is thoracic in type. In some cases there is dulness below, tympany in the middle and resonance above; or when associated with pleuritic effusion, there is from below upward, dulness tympany, dulness, resonance. Amphoric breathing may be heard over the liver.

The key to success in the treatment of empyema consists almost entirely in early diagnosis and in the provision for and maintenance of, good drainage. In treating a case of empyema we must keep in mind the fact that a collection of pus in the pleura is very different from abscess, that it does not drain by gravity, and that the cavity is not obliterated by proliferation of connective tissue; but that it drains by the free upward and downward movement of the diaphragm, acting as a pump, and that the space occupied by the pus is filled by expansion of the lung. The treatment, then, should be directed to the maintenance of free drainage and employment of all means at our disposal to aid expansion of the lung. Whenever effusion takes place in the pleura, the lung, diaphragm and chest-wall are compressed, the degree of compression depending on the amount of effusion. The result of this is loss of tone in these organs, the extent of loss depending not so much on the amount of effusion, as on the length of time the effusion is allowed to remain in the pleura. So, then, it follows from what I have said that early diagnosis and treatment will relieve these organs from pressure, and allow their tone to be restored before permanent and irreparable damage is done.

There are five methods of treatment in vogue, depending on the stage of the disease and pathological conditions found. The first, aspiration or paracentesis, is only of value for diagnosis and as a temporary expedient in cases of much gravity when further operative intervention with general anesthesia would be dangerous to life, though cases have been cured by this method. The second, thoracotomy with

or without resection of a rib. Thoracotomy without resection is not ideal; drainage is imperfect, fibrin clots cannot be removed, and adhesions, if present, cannot be broken up. The consensus of opinion seems to be that it is contraindicated in all cases except where general anesthesia would be dangerous. Thoracotomy with resection of a rib is ideal, and if done early, is curative in about ninety per cent. of acute cases, according to the statistics of those who have had most experience in this line of work. The site for operating, unless a localized collection of pus or an empyema necessitatus is to be dealt with, is over fifth rib in the axillary line. There are probably three very good reasons for selecting this site: drainage by the movement of the diaphragm and not by gravity, freedom from blocking of the tube by ascent of the diaphragm and, lastly, expansion of the lung in this locality is slower than elsewhere. At least two inches of this rib should be excised and the pleura opened throughout the length of the incision.

It has been shown that the size of the opening in the chest wall has very little to do with the subsequent expansion of the lung. A opening large enough to admit one or two fingers is necessary, so that the finger can be swept around the pleural cavity, freeing adhesions, if present, and removing clots of fibrin which are usually found. If these clots are allowed to remain they frequently block the tube, interfere with drainage, and must undergo liquefaction before being discharged through the tube, thereby very much prolonging drainage.

Irrigations, once very popular, have been found to be harmful and sometimes dangerous, and are no longer recommended. Insufflations of iodoform, especially in putrid empyema, are still well thought of by German writers. It is doubtful, however, whether much good comes from it other than to substitute one bad odor for another. Drainage should be provided for, preferably two large rubber tubes, so that if one becomes blocked, drainage can still go on. The tubes should just reach within the costal pleura. Through the outer ends of these tubes large safety pins are introduced, and these fastened to the chest wall with adhesive plaster, thereby preventing the slipping of the tube outward or inward. Dr. Joseph Bryant has invented a very useful apparatus which has been

used in these cases after the stitches have been taken out. The principle on which his apparatus works is continuous expansion of the lung. He stated that he had very few cases requiring secondary operation since using this apparatus.

It is well known that expiration contributes more to expansion of the collapsed lung than inspiration. During expiration, the glottis partially closed (as in coughing), air is sucked from the normal into the collapsed lung. A portion of this air is retained. Each time, more is sucked in, and more and more retained until, finally, the lung expands. The fact that expiration aids expansion of the collapsed lung is made use of in the Wolff bottles, which are so connected with tubes allowing water to be blown from one bottle to the other. As soon after operation as is consistent with safety, the patient should be gotten out of bed, and nitrogenous foods, such as meats, eggs and milk, forced to the limit. If this, with the lung exercises before mentioned, fails to bring about cessation of drainage and expansion of the lung after six weeks or two months, further operative intervention should be considered.

Of many operations devised for these subacute cases, decortication of the lung, grid-ironing the pulmonary pleura and separating adhesions between the pulmonary, diaphragmatic and costal pleura with removal of fibrinous deposit (the last mentioned devised by Lloyd), seems most rational, most conservative and least dangerous to life. He maintains that the pleura does not become insensitive and does not lose its elasticity from deposit of plastic exudate, but is prevented from expanding by adhesions. He accomplishes in an easier and safer way what Fowler and Ransahoff have tried to do by more radical and tedious work. In the light of his experience, the Fowler, Delorme and Ransahoff operations are unnecessary. In chronic cases that persist in spite of faithful treatment by these methods, and when there is danger of amyloid degeneration of the viscera, recourse may be had to one of the mutilating operations, either Schede's or Estlander's. These operations are so mutilating that I would hesitate long before resorting to them. The number of cases requiring plastic work should be very few, if proper treatment is carried out during the acute and subacute stages.

The treatment of tubercular empyema is still a mooted question. Thoracotomy would

probably always be indicated if it were not for the risk of adding other infection to that already present. Primary tubercular empyema with little or no lung involvement should unquestionably be drained. When associated with extensive or incurable disease in the lung, aspiration repeated from time to time probably gives best results, and makes the remaining days more bearable than thoracotomy or any other operative intervention.

DYSENTERY: RECENT OBSERVATIONS ON THE TREATMENT.

By WM. F. WAUGH, A. M. M. D., Chicago, Ill.

In the *Military Surgeon*, Major Raymond discusses the action of ipecacuanha in amœbic dysentery. His treatment is as follows: The patient is put to bed with the expectation of remaining for ten days. In the morning after a warm bath, four ounces of milk are allowed every two hours. Broken doses of salts are given so as to secure during the morning a few liquid dejections. If dysenteric amœbæ are found, the patient fasts from 1 to 8 P. M. or 2 to 9 P. M. excepting as to taking water.

By 8 or 9 P. M. he is made comfortable for the night, his teeth cleaned, his mouth washed; he is placed comfortably in bed, with pillows not too high. At 8 or 9 P. M., to an adult, Raymond gives 30 drops of laudanum in a spoonful of cinnamon water, and 30 minutes later 6 gelatin capsules each containing 5 grains of ipecacuanha, swallowed with the least possible water, raising the head but slightly from the pillow. Immediately he applies across the throat an icebag partially filled with mashed ice, and places a basin convenient to the patient, without specially directing his attention to its presence. The bed-clothing must be just comfortable. A light, weak plaster of flour and mustard, protected with white of egg, can be placed over the stomach so weak that it need not be removed for hours. Lower the light and enjoin absolute quiet. The patient will probably fall asleep and awake near 2 A. M. and emit a mouthful of waterbrash fluid without depressing nausea; or he may not awake until 4 A. M., to find that he can cautiously shift his position to one side or the other, or slowly draw up his limbs, without wabbling or motion

of the abdomen that might precipitate emesis. Absolute quiet must be required and the patient instructed not to shift position or move a muscle for four hours after taking the ipecacuanha. At 5 A. M. the patient may take four ounces of milk, the same at 6 and 7 A. M., then not till 9 A. M., when the previous night's dose reduced one-half is to be renewed. From noon or 1 P. M., he may take four ounces of milk hourly until 4 or 5 P. M.; then after four hours' fast, repeat the full dose of the previous evening. In the meantime the patient may have had one or two stools. Examine the first morning stool for amœbæ, which will probably not be found. What has become of them the doctor does not know and the patient does not care.

Keep up this routine for 72 hours; then discontinue all medication except 15 grains ipecacuanha, preceded by 20 drops laudanum, each evening at bedtime, for the remainder of the week; then 5 grains two or three evenings, when the specific agent of the existent dysentery may be considered eliminated, and the process of repair inaugurated. After the second or third dose of ipecacuanha the patient may not desire the icebag or capsicum plaster. By the third day the stools are well-formed, or constipation may require a saline laxative.

Surgeon Clifford said that after thorough trial of high irrigation with a solution of quinine, the treatment with ipecac was found more satisfactory. No previous cases recovered, but under ipecac 75 per cent. were discharged for duty, and the remainder would probably soon be well.

In the same journal, Capt. Thornburg says there is no doubt that in the specific dysentery caused by Shigi's bacilli, ipecac is of great and probably curative value. In his observation the cases treated wholly by ipecac, or ipecac with quinine enemata, nearly always relapsed when the treatment was discontinued. Sulphate of copper in enemata acted better than silver nitrate—beginning with the strength of 1-10,000 increasing to 1-5,000 or even 1-1,000. Relapses are not uncommon. He has obtained excellent results from enemata of argyrol, a daily enema of 1000 c. c. 1 per cent. solution, retained as long as possible. A weekly enema

of 10 per cent solution 100 c. c., was retained several hours. In from twenty-four to forty-eight hours the amœbæ disappeared from the stools in nearly every instance. There was absolutely no pain; in fact the solution seemed to have an analgesic effect. The stools rapidly became fewer, blood and mucus vanished and the general condition improved amazingly. At the end of a week the enema was used every other day, and at the end of two weeks discontinued. The amœbæ did not return, nor were there any other symptoms of dysentery. Nine months later, none of the patients treated by this method had had a relapse. Absolutely no caustic symptoms were produced. The patient welcomed the enemata on account of the comfort. Ipecac can be given at the same time to lessen the diarrhea; it lessens the stools but does not kill the amœbæ.

In the same journal for February, Gen. A. A. Woodhull adds an interesting note: He believes it a fact that no treatment has been so uniformly successful, regardless of the special cause of the disease as that by ipecacuanha, when the medicine has been properly, which sometimes means persistently, administered. It rarely fails in any stage, acute or chronic, to ameliorate the symptoms and heal the disease. It is specific in the same sense as quinine is a specific. In occasional cases each remedy fails.

The fact that in health an overdose induces innocent emesis has given ipecacuanha rank as an emetic, and the more important fact is omitted that in appropriate doses it may be given non-emetically in quantities which to the inexperienced would seem enormous. Further he says: "I have seen an old man promptly rescued from apparently impending death, and an acute attack promptly cut short in a lady; delicate children relieved, and soldier after soldier cured by ipecacuanha, and ipecacuanha alone, in quantities appropriate to each." He believes its normal action is that of a stimulant to the organic nerves. He adds: "It would be miraculous if any human treatment never failed, but I have had no personal knowledge of such failure."

The superiority of the ipecacuanha treatment of dysentery was firmly established by the British surgeons in India—their very extensive ex-

perience in that country giving them an opportunity for observations rarely if ever possessed by physicians in any other country. It was soon found that the curative action of this drug did not depend in any degree upon its emetic properties, and in fact that emesis interfered with the action. So markedly was this the case that years ago efforts were made to obviate this difficulty by securing an ipecacuanha which had been deprived of its emetine, which was at that time thought to be the only emetic principle of the plant. Many observations were made with the de-emetized ipecacuanha, and opinion seemed to vary only upon the point of the relative effectiveness of the two preparations, it being acknowledged that both were usually successful. It is now known that ipecacuanha depends mainly for its effect upon two alkaloids, emetine and cephæline—the latter being an exceedingly acrid emetic; the other but slightly emetic. The writer has employed, in many cases of dysentery and many more of other affections, the amorphous emetin furnished by the well-known house of Merck & Co. This preparation is a resinoid or purified extract, and contains all the alkaloids of ipecacuanha. Hitherto I have had little difficulty in administering this preparation in effective doses without inducing emesis. The full emetic dose as given by Merck is three grains.

In the treatment of such dysenteries as are found in the northern part of the United States, and in treating certain stages of alcoholism and drug habits, in which this drug is a treasure, indeed, doses of one grain each have been found effective. This dose is administered after the patient is in bed, with the precautions recommended by the English surgeons in India, excepting as to the use of laudanum or a hypodermic of morphine, which I have never had occasion to employ. The writer, who is easily affected by nauseants, takes one grain of this emetin without the slightest suggestion of nausea as a rule, but not always, as certain conditions of the digestive apparatus appear to render the stomach more irritable than it is at other times.

Heretofore the only ipecacuanha official in the United States has been that coming from Brazil, and this contains a maximum of emetine

and a minimum of cephaeline in its composition. But the last revision of the Pharmacopeia threw the door open to the Carthagena ipecacuanha, and in this drug exactly contrary conditions prevail, the cephaeline being largely in excess of that found in the Rio variety. As the Carthagena root is much cheaper than that from Rio, we may expect soon to see very little of the latter in our pharmacies, and to find our ipecacuanha much more irritant than it has been in the past. The druggist may be depended upon to secure the cheaper variety when he is still fully within the limits of his legal right in so doing. For this reason the study of the alkaloids of this valuable plant becomes more important than before.

The writer has taken considerable pains to obtain the pure alkaloid, emetine, from this plant. This is a matter of considerable difficulty. A pure emetine, free from cephaeline, was secured from Burroughs, Wellcome & Company, and this has proved pure enough for all practical purposes, although not quite up to samples prepared by the writer in the laboratories of the Abbott Alkaloidal Co. The separation of the cephaeline is a matter of considerable difficulty and expense; however, this is justified from the viewpoint of the physician, not only because he obtains a safer and more trustworthy preparation, because the absolutely pure emetine is active in so much smaller doses than the ordinary commercial variety, that instead of an increased expense there is really a saving in using the pure article. For instance, while the writer can take one and one-sixth grains of the resinoid emetine in tablets containing one-sixth each without its causing the slightest nausea, he finds that seven tablets of the pure alkaloid emetine, each containing 1-67 grain, never fail to induce slight nausea.

This experience has been confirmed with a number of patients, to whom the drug has been administered for various purposes. Not one has yet proved able to take the seven tablets, gr. 1-67 each, without any nausea whatsoever, no matter what precautions were employed. It is, therefore, evident that 1-67 of a grain of the pure alkaloid is worth more as to the therapeutic effect than 1-6 grain of the resinoid, while there is not quite this difference in the price.

Possibly, and probably, the resinoid emetin dissolves much more slowly than the pure alkaloid combined with sugar of milk, and this may account for the more rapid action of the latter, since being dissolved more quickly it is more likely to cause nausea than the same dose would if the solution extended over a longer period. It may therefore be sometimes of advantage to use the resinoid instead of the pure alkaloid.

So far as known to the writer, Burroughs, Wellcome & Company is the only firm which has yet offered the pure alkaloid emetine commercially. But if the physician has difficulty in obtaining it, there seems to be no reason why any really qualified pharmacist should not be able to prepare for the physician the small quantity which he would require. When doses of 1-67 of a grain are given, a little of the alkaloid goes a long way. The advantage of precision of dose being secured by the use of the pure alkaloid, its solution and absorption may be delayed by administration in capsules with a few grains of bismuth subnitrate. I would suggest gr. 1-6 every four hours as a commencing dose in the treatment of dysenteries.

THE CHOICE OF AN ANESTHETIC IN ANAL SURGERY.*

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Before the days of the specialist in anesthesia, no matter how expert the surgeon, his success was more or less at the mercy of the recent college graduate who secured a hospital appointment, and came into the operating-room, as anesthetist, without any study of the art and without any knowledge of the influence of the different anesthetics upon the human system.

He had heard that chloroform was more dangerous than ether; but that ether might not be administered recklessly, nor in careless quantity, he seldom did know.

Now, the day of specialization has come, and with it the trained anesthetist, making incalculably happier the surgeon's task.

Nevertheless, the surgeon having studied his

*Read before the American Proctologic Society, at Chicago, Ill., June 1, 1908.

patient's system, and understanding his condition as the anesthetist cannot, should use his own judgment in the choice of the anesthetic to be given. Even in the hands of the most experienced accidents will happen; but these may be minimized if the surgeon chooses the anesthetic with intelligent care.

A continuous ether or chloroform anesthesia often causes changes in the liver and kidney cells, and so influences their functions as to permit the passage of toxic substances through those organs without being neutralized before entering the general circulation, resulting in toxemia and death several days after the operation.

Realizing this, it is important that some method of shortening the anesthesia be employed; that the intake of chloroform or ether be lessened by giving the patient some less objectionable or less toxic drug, or by some preceding anesthetic less hazardous.

Recently, many of our prominent surgeons have adopted the use of a tablet composed of hyoscine, morphine and caetine, as a substitute or preliminary to general anesthesia. Professor Tuttle and I became interested in this procedure, and have tested its merits. While not using the tablets, we have now used hyoscine and morphine as a substitute or preliminary to general anesthesia in seventy-five cases in the following manner: Some two or three hours before the time of the operation, the patient is given one-hundredth of a grain of hyoscine. If one hour before the operation the patient is found still awake, the dose is repeated with one-sixth to one-fourth of a grain of morphine. Should the patient, although awake, be very drowsy, the hyoscine is repeated without morphine. In cases where the patient is known to be addicted to morphine, or for other reasons is known to be insusceptible to the drug, we add one-eighth to one-fourth of a grain of morphine to the first injection of hyoscine.

This method has been very satisfactory, both on account of the fact that it has enabled us to do major operations, covering several hours, with a few drachms of chloroform and a proportionate amount of ether—if not quite eliminating, at least greatly minimizing the danger from post operative hepatic toxemia; and also from the fact that shock—and

that nightmare to all patients, the pre-anesthetic period—is done away with. Also, owing to the dryness of the mouth and absence of saliva during operation, post-operative pneumonia seldom occurs.

It is very important, however, that great caution should be taken in the use of hyoscine and morphine, for grave results would follow its injudicious use.

In all cases the drug should be given two or three hours before the operation, and in small doses. By following this rule, and never allowing the drug to be administered except under your own supervision, or that of your trained assistant, the danger from this latest and most helpful anesthetic will be almost nil.

It is true that almost all new anesthetics suffer in reputation because experimenters use them injudiciously, or because those who commercially exploit them fail to point out the *dangers* as well as the benefits of their drugs, and hyoscine is too valuable to fall into disrepute.

Ethyl-chloride had numerous ill-starred experiences. Innumerable imitations came on the market, and every medical fledgling devised a new mask which he hastened to use, whether the cases were suitable or not, regardless of the consequences. The result was that men of standing and experience who should have been the first to embrace its use were the last to test it.

At the New York Polyclinic, St. Bartholomew's, and in private practice, we have used this anesthesia, now, over six hundred times as a general anesthetic for short operations and examinations, or as a preliminary anesthetic to chloroform or ether, and, so far, we are glad to say, have not had a single accident or a bad result in its use.

I believe Dr. James P. Tuttle, with whom I have been associated for several years, was the first to use this anesthetic in the United States; and, with Dr. Martin Ware, has been its most ardent supporter; and I believe the success of ethyl chloride, in this country, is due to the earnest support given it by these two gentlemen.

I was the first to advocate the drop method in its use (for which Dr. Tuttle has given me credit in a paper read before the Country Medical Society). I found that in the drop meth-

od, the drug could be used more intelligently, and that also much less anesthetic was required. Another advantage is that in this procedure it does not crystallize all over the mask as it does in the spray method.

We do not, of course, advocate this anesthetic to the exclusion of ether or chloroform; that would be absurd; but we do hold that for examinations, short operations, as a preliminary anesthetic to ether or chloroform, and as an adjuvant to hyoscine and morphine, it is safer and more efficacious than any anesthetic we use to-day.

We are firm believers in the open method of administering anesthetics, and decidedly opposed to any form of closed inhaler. To this, Dr. Tuttle and I attribute, in great measure, our happy results with ethyl chloride.

Accidents, it is true, have happened from the use of ethyl chloride—or, I should say during its use; but they have been with men who used no judgment in its administration. One case, in a New York hospital, was where the house surgeon administered this anesthetic to a child, in the sitting posture, with a mask of his own device, and then proceeded to open a large peritonsillar abscess. The child promptly died from suffocation in its own pus. Yet it was recorded as a death from ethyl chloride—which was certainly unjust.

We do not find ethyl chloride, alone, suitable for any anesthesia which must last over ten minutes, as vomiting is apt to follow a prolonged use of this drug. It is also contra-indicated in alcoholics; children with adenoids; patients suffering from acutely inflamed conditions of the throat; or advanced cardiac disease. In the latter case, however, I must state that Dr. Tuttle differs from me. Notwithstanding its contra-indication in cardiac cases, he has used it in severe cases of this character with no bad results.

Spasm of the larynx has occurred in some five per cent. of our cases; but this is at once relieved by withdrawing the anesthetic, or by substituting a few drops of chloroform.

It is admitted that our method of administering the anesthetic is more wasteful than with the mask; but since by this procedure we infinitely lessen the risk to the patient, the expense cannot be considered.

Another anesthetic that has been much over-

looked, and one that is particularly safe, is nitrous oxide alone or with oxygen. I think prejudice has a great deal to do with its neglect. Those who condemn it are usually those who have used it but once and abandoned it because of the rigidity and cyanosis. But this is not the way to get results. Here we have something absolutely safe, and we should exercise a little patience in giving it a fair test.

In our opinion, the surgeon will get better results and the anesthetist gain confidence if the anesthetic is not rushed in the beginning. The anesthetist should take plenty of time; let the patient get used to the smell of the anesthetic and accommodate himself to his surroundings. The patient, then, is not frightened; it takes less anesthetic to put him under it and he comes out in good condition. There is nothing to be gained by crowding the anesthetic, and, under no circumstances, should a patient be restrained in the early stages of anesthesia.

Nitrous oxide, alone, is not suitable in all cases, however, and is not well adapted to operations around the rectum, on account of the straining and cyanosis; but this is materially obviated by the addition of oxygen.

For alcoholics, or very vigorous individuals, it is not recommended unless the patient will pay the cost! For the quantity required in such cases is quite an item, and an expense one does not feel in duty bound to assume.

I have done a Whitehead operation under gas and oxygen, and it was eminently satisfactory. I can also report satisfactory results under this anesthesia in an abdominal operation lasting one hour.

The apparatus necessary for this anesthesia is certainly cumbersome, however, and it could hardly be recommended for operations performed outside of an institution.

In conclusion, let me say, be sure of your anesthetist. The choice of an anesthetic is important, but even more so the choice of anesthetist. No man should give an anesthetic alone, until he has been proved competent. If you know the hospital anesthetist is not competent do not risk your patient in his hands. If the patient cannot afford to pay a specialist, content yourself with a smaller fee and pay a man you know capable, yourself, rather than risk unhappy results. It is worth the money!

Having a competent anesthetist you need give no thought to that part of the work, but devote all your energies to the absorbing task before you; secondly, you have less to contend with, afterwards, if your patient comes out of the anesthetic well and has no bad after effects to depress him, as well as wound and shock.

Above all, you want an anesthetist who is competent in an emergency. The man who knows what to do—and *does it*—is the man who is worth his fee. There is no time to cogitate when a man's heart stops beating; but there is hope for the patient, and success for the surgeon *if the Man behind the Dope is on his Job!*

28 West Fifty-ninth Street.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.

Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va.

LECTURE XLVII.

Anesthesia and Anesthetics—General and Local Anesthesia—Various Drugs Employed, with Their Therapeutic Action, Indications for Use, Methods of Administration.

HISTORICAL.

The Assyrians used digital compression of the carotid artery to produce insensibility during the operation of circumcision. The Egyptians administered Indian hemp and the juice of the poppy to dull pain. The Jews relieved the death agony of criminals during crucifixion by applying a sponge to the face saturated with the "wine of the condemned." The Arabians used mandragora. Isidorus, one of their writers, says: "wine of the bark is given to those about to undergo operations, that, being asleep, they feel no pain." The Hindus administered the fumes of burning Indian hemp. The Chinese gave a preparation called Ma-yo, which caused the patients to become insensible.

The Monks, during the Middle Ages, produced anesthesia by causing patients to inhale the odor of a "sleeping sponge." The following is found in a book of the Sixteenth Century. "Take of opium, mandragora bark and henbane root, equal parts. Pound them together and mix

with water. When you want to sew or cut a man, dip a rag in this, and put it to his forehead and nostrils. He will soon sleep so soundly that you may do with him what you will. To wake him, dip the rag in strong vinegar."

References to anesthesia and anesthetics are frequent in the writings of Shakespeare and other authors. Dubartas, in 1592, says:

"Even as a surgeon minding oft to cut
"Some cureless limb, before in use he puts
"His violent engines in the victim's member,
"Bringeth his patient in a senseless slumber;
"And griefless then, guided by use and art,
"To save the whole, saws off the infested part."

In the Seventeenth and Eighteenth Centuries it became a common practice, before operation, to drug patients with narcotics to allay pain and prevent shock. About this time great interest was taken in mesmerism and hypnotism and repeated instances are on record where severe and prolonged operations were performed without pain to the patient by throwing him into an artificial sleep or trance. It was found however, that the methods were uncertain and dependent upon the susceptibility of the individual case.

We now come to the anesthetics of the present day, and the history of the discovery of ether will be traced at some length, as every student should know the facts, for, while there is a question as to whether the credit be due to Long, to Jackson or to Morton, there is no doubt that it is due to an American.

As soon as Priestly discovered oxygen, various investigators made many experiments with it and other gases. J. Marion Sims relates the following incident which occurred in 1839. A number of half-grown boys in South Carolina were diverting themselves by inhaling ether. Becoming intoxicated, they seized a negro who was watching their antics and compelled him to take the drug by holding a saturated handkerchief over his nose. At first his struggles were amusing, but soon he became unconscious, had stertorous breathing, and his condition caused great alarm. After an hour or two he recovered and was none the worse for his experience.

Three years later one of the participators in the affair became the pupil of Dr Crawford W. Long, of Georgia. He called Dr. Long's attention to the effect of ether, and they began

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

to experiment on each other. In March, 1842, Long persuaded a patient on whom he was about to operate for a small tumor to inhale ether, and the operation was completed without pain. The record on his ledger reads: "James Venable, 1842—Ether and Excising Tumor, \$2.00." During the year he did four other operations in the same way, and repeatedly used ether as an anesthetic in 1843 and 1845. His work was known to neighboring practitioners, but was not published: hence the dispute which subsequently arose as to his right to priority in the discovery of anesthesia.

In 1844, Dr. G. Q. Colton gave a lecture at Hartford, Conn., on nitrous oxide gas. A dentist named Horace Wells was present, and immediately saw the possibility of using it as an anesthetic. The next day he induced Dr. Colton to give him the gas, and while under its influence he had a tooth extracted. When he regained consciousness, he said—"This is a new era in tooth-pulling." He gave nitrous oxide gas to several of his patients, and shortly afterward went to Boston to give a demonstration at the Massachusetts Hospital, but for some reason it was not a success, and he was denounced as an impostor. Later, his mind became deranged, and at the age of thirty-two, he committed suicide while confined in a New York Jail.

In 1846, W. G. T. Morton, of Boston, a dentist and former partner of Horace Wells, began to investigate various narcotics in an effort to find a better agent than nitrous oxide gas to produce anesthesia. At the suggestion of Charles T. Jackson, a chemist, he experimented with sulphuric ether. He inhaled it personally and lost consciousness for seven minutes. He then gave it to several patients and extracted teeth without pain. He finally went to Dr. John C. Warren and obtained permission to try the anesthetic at the Massachusetts General Hospital. On October 16th, 1846, Morton, in the presence of a large number of medical men, gave ether to a patient who was operated on by Dr. Warren. The administration was a complete success and created interest and enthusiasm. Morton, for a time, refused to disclose the nature of the agent he used. He called it "Letheon," and disguised its color and odor by the addition of dyes and aromatics. He offered to go into partnership with Jackson, who shared his secret, and to put it on the market

as a patent medicine. Finally, however, becoming convinced that the medical profession would not use the agent unless they knew its composition, he announced the fact that it was simply sulphuric ether.

Oliver Wendell Holmes coined the words "anesthesia" for the condition and "anesthetic" for the agent, both of which are now in universal use throughout the world.

A dispute immediately arose between the friends of Morton and Jackson as to who was entitled to the credit of the great discovery. When their rival claims were presented to Dr. Holmes, he proposed that a monument be erected to Painless Surgery, with the statue of Jackson on one side, of Morton on the other, and the inscription: "TO E(I)THER." Morton spent his life in contentions and disputes, and died at the age of forty-nine, broken-hearted and bankrupt. Jackson, like Wells, became insane, and died in an asylum in 1880.

A dispassionate review of the evidence seems to show that Long, of Georgia, unquestionably discovered and employed ether as an anesthetic four years before Morton's demonstration in Boston. Owing, however, to his failure to publish it and to the remoteness of the district in which he lived, his work was unknown and would probably have died with him. Between the claims of Jackson and Morton to the discovery of ether, it may be said that Jackson supplied the inspiration, while Morton practically demonstrated the fact.

The use of ether as an anesthetic was immediately taken up in Great Britain and on the Continent. Sir James Y. Simpson, of Edinburg, was the first to employ it in obstetrical practice. Owing to the fact that several deaths were reported and that its odor was disagreeable and persistent, he began to search for another and better agent. Waldie, a chemist, suggested the use of chloroform, and Simpson tried it and soon became convinced of its superiority. In November, 1847, he published a paper: "Notice of a New Anesthetic Agent as a Substitute for Sulphuric Ether."

In 1884, Karl Koller, of Vienna, demonstrated the power of cocaine to produce local anesthesia. Eucaïne, stovaine, nova cocaine and other substitutes have since been introduced.

ETHER.

Ether (C_2H_5)₂O, is a clear, colorless, volatile liquid, having a disagreeable, pungent

odor, and boiling at a temperature of 95° F. Its gas is two or three times as heavy as air, and is very inflammable: hence there is danger in using the agent in a room with an open flame such as lamp or gas-light, or a wood fire or oil stove.

Ether may be administered by a special apparatus, such as Allis' inhaler, but the growing tendency is to give it by the open or drop method, which consists in placing a number of layers of gauze over the patient's face, and dropping the ether on it at a rate regulated by the effect produced. The first result is to cause irritation of the larynx and trachea, producing cough. This soon passes off and is followed by a stage of primary anesthesia which lasts two or three minutes. The face is flushed, the respiration hurried, and the pulse quick and bounding. A stage of excitement often follows, in which the patient struggles, becomes rigid, and talks or sings. This finally gives place to general muscular relaxation, complete unconsciousness and insensibility to pain. The breathing is regular and often stertorous. Ether is at first a stimulant, but later a depressant. The immediate danger of ether is from respiratory failure, which should be combatted when threatened by discontinuing the anesthetic and the use of artificial respiration and administration of oxygen. The remote dangers are congestion of the kidneys with suppression of urine, or irritation of the lungs, followed by bronchitis or pneumonia.

CHLOROFORM.

Chloroform (CHCl_3), is a clear, colorless, volatile liquid, of sweetish taste and pleasant odor. It boils at 142° F., and its gas is only slightly inflammable. If exposed to an open flame, it becomes decomposed and liberates free chlorine, which causes headache and nausea to the occupants of the room.

Chloroform is usually administered on Es-march's inhaler, which consists of a wire frame covered with a single layer of porous woolen cloth. A few drops of chloroform are put on the inhaler, which is held some distance from the patient's face. The inhaler is gradually brought nearer as tolerance is acquired to its effect, but the vapor of chloroform should always reach the patient well diluted with air. It is claimed that anesthesia is quicker and more pleasant if the chloroform is warmed by placing the bottle occasionally in warm water.

The effect of chloroform is at first to dilate the pupil and to stimulate the pulse. The patient soon becomes excited and acts as if under the influence of an intoxicant. As this stage passes off, the pupils contract, the pulse becomes somewhat weaker, and the face loses its color. The breathing becomes deep and regular, and there is unconsciousness, general muscular relaxation and complete insensibility to pain. The greatest danger from chloroform is sudden cardiac failure, although numerous deaths have been reported from its action on the respiratory centers. When dangerous symptoms develop during anesthesia, the drug should at once be withdrawn, and abundance of fresh air admitted to the room, the head of the operating table lowered, and artificial respiration practiced, coupled with inhalation of amyl nitrate. Artificial respiration is best effected by Sylvester's method, care being taken that the motions are not carried out too rapidly, and that they are sufficiently exaggerated to insure expansion and contraction of the chest walls. Hypodermic injection of strychnine or other drugs is useless, as the danger is too imminent for there to be sufficient time for the system to be affected in this way.

RELATIVE MERITS OF ETHER AND CHLOROFORM.

The question of the relative merit of ether and chloroform is one which has caused bitter and, often, unprofitable debate. It is a fact that surgeons inherit their advocacy of one or the other agent, just as they inherit their political principles or theological belief, and it is as hopeless to try to convert an advocate of ether to chloroform as it would be to change a Republican to a Democrat or a Baptist to an Episcopalian. In America, the North and West give ether practically to the exclusion of all other anesthetics, while in the South, chloroform is the favorite agent employed. As the most prolific writers and brilliant clinicians live in the North, there is a tendency in the South among the younger generation to either adopt their teaching, or else to apologize for the use of the anesthetic of their forefathers. In justice to chloroform, it must be said, however, that it is still the favorite anesthetic with surgeons the world over, and is, today, given twenty times where ether is given once. In France, except in the city of Lyons; in Germany and Austria, except in the city of Vienna; in Italy and in Great Britain, chloroform or

a mixture of chloroform with other agents is practically universally employed. Chloroform is also exclusively used in tropical countries, but here there is no choice, because ether, with its low boiling point cannot be employed.

There is no question that chloroform is more pleasant to the patient, is quicker in its action, causes less nausea and vomiting, and is not as likely to be followed by nephritis or pneumonia. Anesthesia can be produced and maintained with a smaller quantity, and hence the agent is cheaper and more easily transported. Its vapor is not inflammable and it can be used without danger in the presence of an actual cautery or an open flame. The advocates of ether admit all these facts, but claim that they should not be taken into consideration, as the question is not one of esthetics or economy, but of life or death, and that it has been successfully demonstrated that ether is safer than chloroform. They claim that chloroform causes one death in every 2,500 cases, while ether causes only one death in every 8,000, and, therefore, is three or four times safer than chloroform. Statistics from numerous and reliable sources in the North and West seem to conclusively prove this statement as far as that territory goes, but figures in the South, in Great Britain, and on the Continent are different. Nussbaum has seen in military life 40,000 administrations of chloroform without an accident. Hunter McGuire reports 28,000 administrations in the Confederate Army Corps of which he was director, without a fatality, and I, in private practice, have been present at 15,000 operations done under chloroform anesthesia, without a death from its use. These figures could be extended, but they are sufficient for the purpose.

After much thought and observation, I have come to the conclusion that, while certain classes of cases take one anesthetic better than the other, provided they are administered equally skillfully, for practical purposes, it is the anesthetizer and not the anesthetic who should be considered. In visiting the clinics of the North and occasionally seeing the administration of chloroform, I have ceased to wonder why sometimes patients die, and am surprised that any of them live. While again, in my travels South, I am struck by the timid, indifferent way in which ether is administered in the few cases it is employed, and marvel that the sur-

geon, after completing the unsatisfactory operation on a struggling patient, should ever use the agent again.

No one man, in my opinion, is competent to give both ether and chloroform. The end to be accomplished is the same in each, but the method of administration and the symptoms of danger are so absolutely different, that he might as well try to attain salvation by attending a Jewish Synagogue one week and a Catholic cathedral the next. In my private hospital, I use chloroform almost exclusively. In my public clinic, I employ both agents, but have a different man, especially skilled in the administration of each. In my out-of-town work, when asked which I prefer to be given the patient, I always reply, the one with which the anesthetizer is most familiar.

(This lecture continued in next issue.)

Book Notices.

State Board Questions and Answers. By R. MAX. GOEPH, M. D., Professor of Clinical Medicine, Philadelphia Polyclinic, etc. Philadelphia and London. W. B. Saunders Co. 1908. Larve 8vo. 684 pages. Cloth, \$4 net; half Morocco, \$5.50 net.

This is practically an epitome of the various branches of medicine, prepared in the form of questions and answers, and is especially intended, as the title indicates, for the use of those graduates who wish to "brush up" for medical examinations by State boards, etc. The questions in each department have, for the most part, been selected from those questions asked during the past four years by the more prominent State boards of medical examiners, with here and there interpolations of questions and answers, so as to give a proper connection and symmetry to the whole system of the book. It includes in regular order, questions and answers on physics, chemistry, physiology, anatomy, hygiene, materia medica and therapeutics, practice of medicine, surgery, obstetrics, gynecology, pathology and bacteriology. The graduate in medicine who thoroughly masters the contents of this book may feel himself qualified to pass any State board of this country. It will also well serve the purpose of the examiners in selecting their questions for those applying for license to practice. As soon as this work be-

comes properly advertised there will be an immense demand for it each year by the new graduates. The double column index of over fifty pages gives ready reference to any subject considered in the volume.

Manual of Diseases of Infants and Children. By JOHN RURRAH, M. D., Clinical Professor of Diseases of Children, College of Physicians and Surgeons, Baltimore. Second Edition, thoroughly revised. Philadelphia and London. W. B. Saunders Co. 1908. 12mo. 423 pages. Flexible leather, \$2 net.

This book, while it contains many hints and practical points for the practitioner, is more especially intended for the medical college students to "clinch" in memory the points made by the professor in his lectures on pediatrics, and the profusion of illustrations selected with reference to almost every part of the subject greatly assists the understanding of the text. It is a thoroughly authoritative work, so far as the correctness of its teachings go. The chapter on "Therapeutics for Infants and Children" is a good one for the doctor to read, as he will derive some important suggestions therefrom. But it is as a class-room text-book and to review the subject of lectures given by the professor of diseases of infants and children that its value is demonstrable.

Editorial.

Medical Society of Virginia.

The thirty-ninth annual session of the Medical Society of Virginia will assemble in the Auditorium of Jefferson Hotel, Richmond, 8 P. M., Tuesday, October 20, 1908, and will continue in session through Friday, October 23. Under the magnificent Presidency of Dr Wm. F. Drewry, of Petersburg, the indications are that this will be by far the largest attended session of all. The first night's meeting will be a most important one, as, beside the confirmation of the ten District members of the Executive Council, five additional members will have to be selected from the State at large. Under the new Constitution and By-Laws the present Executive Committee then goes out of existence—all future business being transacted by the Executive Council.

The local Committee of Arrangements, of which Dr. Stuart McGuire is chairman, will

request that there be no meetings Wednesday and Thursday nights—these nights to be given to relaxation, social entertainments, etc. It has also been arranged that clinics be held at the Medical College of Virginia and the University College of Medicine, of this city, each morning of the session, beginning at 8 A. M., and concluding at 9.30 A. M., in ample time for members of the Society to return to the Jefferson Hotel Auditorium by 1 o'clock, at which hour each morning session will begin.

The Committee of Arrangements has also appointed a sub-committee for the entertainment of ladies who may accompany the doctors on their visit to the city.

About August 20, the preliminary postal card will be sent to all members of the Society, asking those who propose to present papers during the session to announce the titles of the same—all to be in hand by September 15, so that the official program may be prepared and issued about September 20.

It is earnestly requested that members in Virginia will urge their medical friends not already members to send in their applications for membership promptly, and to arrange to attend the session.

Board of Charities and Corrections.

Following the lead of some other States, the Virginia Legislature, during its last session, authorized the establishment of a Board of Public Charities and Corrections. According to the manner in which it is to be conducted it can accomplish a great deal of good. This Board is now in a stage of organization, and will scarcely be ready for effective work until the coming winter.

It is seldom that we point out the special merits of any article contributed to this journal, but in connection with the duties of the Board spoken of, the contribution in this issue by Dr. Marc Ray Hughes, of St. Louis, is so apropos that we cannot avoid calling special attention to it; for it points out some of the abuses of the police system of this country which can and should be corrected. And in cases of reasonable doubt as to the psychic condition of the prisoner at the moment of committing the crime, it suggests the right of the courts to pass an "indeterminate sentence"—both as to criminals calling for capital punish-

ment or terms in penitentiaries and jails. Possibly, in some instances, even "lynch law" is exercised when, if the "lynchers" were properly informed as to the mental condition of the culprit, it would not have been carried out.

It may be unsafe to leave the recommendation of an "indeterminate sentence" to an ordinary jury as now selected. Such a jury can only determine, from the evidence, whether the party was or was not guilty of the offense charged. If found guilty, there are cases in which the judge himself may not be able, unadvised, to pass a proper sentence. In all such it would be in accordance with advanced human sentiment and opinion if a court, composed of unbiased experts as to questions of insanity or unbalanced mentality—temporary or permanent—should aid the judge in advice as to the psychic condition of the prisoner at the moment of committing the crime.

It is not improbable that in the now noted Thaw case, in New York, it would have been wisest to have passed the "indeterminate sentence, for there were certainly circumstances connected with it which might have misled the prisoner to a conviction of duty to kill. In short, the surrounding circumstances which may have influenced the party under trial to have committed the criminal act should be taken into consideration when passing the sentence of the law. The Board of Charities and Corrections, if properly composed, should have at least an almost authoritative recommendatory power in such instances.

There can be no doubt that, in many cases, those in charge of jails and penitentiaries are unduly harsh with prisoners whose mental condition scarcely justifies such harshness. It is an old saying in law that all parties, guilty of the same degree of offense, should be treated alike. Such an adage, surely, should be taken with qualifications. It is not that we advocate favoritism in the discharge of justice; but all criminals receiving a like sentence under the law are not alike in their mentality. Some have scarcely ever been taught the difference between right and wrong doing. Some are so low in mental scale as easily to imbibe the idea of anything to accomplish an end. We hear of such things even among low-down politicians who achieve a certain degree of success by their apparent unscrupulous acts. Educa-

tion in morals can be practiced in prisons as in schools and homes; and properly planned systems of rewards and punishments can be arranged in prisons as elsewhere.

While we would not be understood as advocating undue leniency in the management of prisoners—for some scarcely receive their just deserts by imprisonment alone—yet, we believe that for a large number in penitentiaries, etc., it would be good policy to adopt to let each one "work out his own salvation, with fear and trembling." Even a probation period might be established for the prisoner released on account of his good behavior in prison. By the adoption of a course of education, and a proper system of reward and punishment, a large number of prisoners may be restored to good, honest, citizenship.

The point in mind is to treat the prisoner much as the doctor treats his patients. Some are afflicted with such deadly diseases that the most skilled practitioner cannot eradicate. Others have such infirmities that no art nor skill can relieve and, as a result, live as hopeless burdens upon friends or the community. Others who are sick can be cured by proper treatment, and can remain well so long as they obey the directions of the doctor. So it is with comparable classes of jail and penitentiary convicts.

As we understand it, this new State Board of Charities and Corrections will have all such matters under their care; and we again ask members thereof, as well as others, to carefully read the article in this issue of the *Semi-Monthly* referred to.

The Chicago Medical Society

Is perhaps the largest of all local Medical Societies in this country in affiliation with the American Medical Association—having a membership of about 2,200. In former years it does not appear that many of its members took active interest in the annual elections. But this year a strong feeling developed against the dominance of the officers of the A. M. A., resident in that city, in the control of the local Society. Last year, it is said, only about 400 votes were cast in the election of officers, and before that, fewer votes still; but this year there were about 1,500 votes, and Dr. Alfred C. Cotton was triumphantly elected President

in opposition to the candidate of the A. M. A. ring party. *The American Journal of Clinical Medicine*, in commenting on this matter says: "The Medical profession of America cannot fail to grasp the significance of this election. A majority of the Chicago members of the A. M. A. has revolted against the dominancy of 103 Dearborn Ave.," although as loyal to the true interests of the American profession as doctors anywhere else.

Journalistic.

The *Southern Medical Journal*, published at Nashville, Tenn., \$2 a year, has been launched upon a high ethical plane, and is to contain no proprietary advertisements. The first number—July—contains about 70 pages, and is filled with original articles by Southern doctors, abstracts, etc. It has an editorial staff of 14 prominent Southern surgeons and physicians, with Dr. W. A. Witherspoon as Editor-in-Chief, and 41 Collaborators.

The *Old Dominion Journal of Medicine and Surgery*—the same title as that given to the journal started some years ago by the Medical College of Virginia—is to be revived in this city, and the first number will be issued about the time we go to press this week. Drs. McCaw Tompkins, Beverly R. Tucker and Herbert Wright are editors, with Drs. Douglas Vanderhoof and Murat Willis, as assistants.

The Wise County Medical Society

Held its regular meeting at Coeburn, Va., July 22, 1908. The following papers were on the program: My Opinion of the Value to the Practitioner of Post-graduate Work in New York, by Dr. G. W. Tompkins; Diagnosis and Treatment of Diphthereritic Laryngitis, by Dr. J. B. Wolfe; To What Extent is the Physician Responsible for Sepsis Following Parturition, by Dr. C. W. Culbertson; and Treatment of Summer Diarrhea in Children, by Dr. H. S. Smyth. The officers of this society are Drs. J. P. Edmonds, of Stonega, President, and T. M. Cherry of Glamorgan, Secretary.

Lee County, Va., Medical Society.

The doctors of Lee County, Va., have organized themselves into a Medical Society with the above title, Dr. Philip D. Pence, of Darbyville, Va., being secretary and treasurer. This organization places itself in affiliation with the Medical Society of Virginia.

The Piedmont Medical Society

Met at Orange, Va., July 18, 1908. Dr. J. L. Crenshaw, of University Station, Charlottesville, Va., was leader of discussion, the subject, however, not being announced in the notice sent us. Dr. John W. Scott, of Gordonsville, is President, and Dr. Lewis Holladay, of Orange, is Secretary of the Society.

St. Luke's Hospital, Richmond, Va.

Dr. Stuart McGuire's private infirmary, St. Luke's Hospital, will close August first, to reopen some time in September. The institution will be thoroughly renovated, a large sun parlor added and a new operating plant established.

Dr. John T. Graham, Wytheville, Va.,

Has been chosen as the member of the Executive Council from the Ninth Congressional District for the Medical Society of Virginia, and has begun active, hard work for the advancement of the Society in his district.

Gray's Anatomy.

We are pleased to announce that an new edition of the above excellent book is about completed, and will be issued by the publishers, Messrs. Lea & Febiger, of Philadelphia, probably during August—certainly in time for the approaching college sessions.

Messrs. Wm. R. Warner & Co.

This old, reliable house will be incorporated under Pennsylvania laws, Mr. William R. Warner, Jr., retaining the presidency. This move will enable Mr. Warner, who has managed the entire business, to transfer to others many details, and assures friends and patrons of continuation of the safe and conservative policy which has proven the keynote of the success of the firm and which has characterized it from its foundation in 1856.

Messrs. Sharp & Dohme.

The advertising department of this popular firm, under charge of Mr. H. M. Seem, is being retransferred to New York. All communications for this department should be addressed to 41 John Street, New York City.

The Farbenfabriken of Elberfeld Co.

Has moved its offices to 117 Hudson street, New York, to which new address all communication should hereafter be addressed.

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\$2 00 a Year.
10 Cents a Copy.

Original Communications.

PERNICIOUS ANAEMIA.*

By WILLIAM S. GORDON, M. D., Richmond, Va.
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Recent researches have established the fact that pernicious anaemia is more common than has been supposed, and have furnished additional information concerning its nature and treatment. For this reason I have selected the disease as a subject for discussion; and my purpose is to present a composite abstract, so to speak, of articles appearing in text-books and medical journals during the past year and a half, and to embody whatever information my own cases have furnished, and the deductions they have seemed to justify. In the endeavor to carry out this purpose, I shall refrain from transgressing the time limit by quoting authors and giving references at length.

Hunter, in the *British Medical Journal*, of November 9th, 1907, expresses the view, after an elaborate investigation, that pernicious anaemia is a definite, specific, hæmolytic, infective disease, characterized with glossitis, gastro-intestinal symptoms, nervous disturbances, fever, power of recovery, and tendency to relapse. Although his belief in the infectious nature of the malady is shared by others, no specific microbe has been discovered. At the present time the majority of clinicians and experimenters hold that the disorder is due to the influence of organic toxins resulting either from chemical or microbic action. How far this influence is exerted upon the blood to produce hæmolysis, with reparative or compensatory changes in the bone-marrow, or upon the blood-making structures to inhibit hæmogenesis has not been determined. With these preliminary statements we can consider the subdivisions of the subject.

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The majority of cases are found in males of middle age, but the disease occurs in the extremes of life. It is rare in infants. Dr. H. C. Carpenter reports the case of a female infant suffering from pyelo-nephritis, which seemed to result in pernicious anaemia. The blood was characteristic, and the autopsy revealed an enlarged liver which had undergone fatty degeneration. L. R. Dumas and Poisot refer to a child of eleven years, who developed pernicious anaemia of the plastic type during the course of miliary tuberculosis; and to a child of twenty months with otitis, septicaemia, and pernicious anaemia—substantiating the statement of Dr. Theodore Potter that the rural districts furnish the majority of cases. Cabot states that out of 337 cases, two-thirds came from the country. In shock, mental and physical strain, malaria, alcoholism, syphilis, and repeated pregnancies, predisposing or exciting causes are supposed to be found. Freund calls attention to retention of urine containing hæmolysins previously existing in the blood and reabsorbed. Dr. Howard Anders cites a case in which he assigns as a cause a floating kidney leading to gastro-intestinal disorder. The view that other types of anaemia, if sufficiently prolonged or severe, may terminate in the pernicious type is forcefully presented by Dr. C. H. Bunting, while others are strongly opposed to this explanation. Cohnheim and Ehrlich think that changes in the bone-marrow, with increase of megaloblasts, have a decided influence. While it is claimed that gastro-intestinal toxæmia may be a result of pernicious anaemia, still the preponderating belief is that the truth lies in the reverse of this proposition. Oral sepsis and fermentation in the gastro-intestinal tract, with the formation of toxins which act directly as hæmolytics are believed by many clinicians to be the starting point of the disease.

The exact nature of the offending toxins is not yet known. Among those mentioned are the

products of saccharo-butyric putrefaction due to the bacillus *aerogenes capsulatus*, and toxo-lecithids and toxo-lipoids, similar to those derived from the cobra venom. Tallquist has found in *bothriosephalus latus* a lipid substance possessing hæmolytic properties, and states that the same substance exists in the mucosa of a man's digestive tract. Ammonium butyrate is said to be one of the hæmolytics.

In this connection, I wish to report a case recently referred to me by a physician in a neighboring State. The patient was a stationery engineer of middle age, who had been treated for uncinariasis and pronounced cured. The skin was of a pale lemon hue, the conjunctivæ almost clear, and the pulse rather frequent and of low tension. There were soft systolic anæmic murmurs, gastro-intestinal irritation, slight enlargement of the liver, dyspnœa, and progressive loss of weight and strength. The urine was practically normal. Careful examinations made by my assistant, Dr. Karl S. Blackwell, and by Dr. E. Guy Hopkins, failed to reveal hooklets. The hemoglobin was 25, the white cells 5050, and the red 1,650, the color index being high. The red cells were of all shapes, two to fourteen microns in size, and poikilocytosis was present. Normoblasts and megaloblasts were abundant. The question arises, was the pernicious anæmia an end product of the anæmia set up by the parasites? This case demonstrates at least the importance of examinations of intestinal parasites, and the additional fact that the time may come when the removal of the parasites does not cure what they have either directly or indirectly produced.

Concerning the pathology of the disease, Myer and Heinecke state that the liver, spleen, and sometimes the lymph nodes assume a foetal type as regards their cellular activity. Erythroblastic cells and newly formed leucocytes appear, while the bone marrow of the adult shows renewed activity. These changes are regarded as reparative and not the primary cause of the anæmia. In the marrow the myeloid is supplanted by lymphoid tissue. Increase of lymphocyte tissue, especially in the digestive tract, has been noted and is often accompanied by similar conditions in the blood. It is claimed that these findings may have some connection with pernicious anæmia. In one case (Fortune's) the gall bladder was found empty. Achylia gastrica,

upon which much stress has been laid, may be viewed as a cause or as a result until further knowledge on this point has been obtained. Enlargement of the liver, and sometimes the spleen, with pigmentation and fatty degeneration of these and other organs is common. Iron pigment is found in the outer zones of the hepatic lobules. The gastric mucosa may show marked atrophy. The skin is tinted a pale or deep lemon yellow, the color of the conjunctiva frequently remaining normal or almost normal. The muscles are quite red. The subcutaneous fat is often well preserved. The bone marrow is dark, red, and soft, containing many nucleated red cells. Macroblasts especially are numerous. Congestion, enlargement, and pigmentation of the hemolymph glands are not infrequent. Sclerosis of the posterior and lateral columns of the spinal cord has been observed.

The blood changes are noteworthy. The fluid is pale and slips rapidly from the puncture. The hemoglobin may reach fifteen per cent., while the color index is high. The coagulation time is prolonged. The reduction of the red cells is, on an average, 1,500,000 per. c. cm. while the average diameter of the cells is increased. Poikilocytosis is marked. Nucleated red cells are always present. Polychromatophilia is characteristic. By some authorities it is stated that the megaloblasts must outnumber the normoblasts in order to establish a diagnosis. In three-fourths of the cases there is leucopenia, which may be extreme. Myelocytes are nearly always present. It must be borne in mind that there is a real deficiency in the total amount of hemoglobin.

Among the diseases with which pernicious anæmia is associated are myelitis, tabes, peripheral neuritis, aphasia, amaurosis, diseases of the kidney, and intercurrent pyæmia. Fortune reports a case of epilepsy in which pernicious anæmia seemed to reduce the number of paroxysms.

Some of the signs and symptoms of the disease have been referred to in connection with the pathology. Among the gastro-intestinal disorders may be mentioned glossitis, sore mouth, bad taste in the mouth due at times to defective teeth, nausea, vomiting, diarrhœa, alternating in some cases with constipation, and enlargement of the liver and spleen. Achylia gastrica may be a precursor of the blood changes. Anorexia, muscular weakness, impaired nutrition, pro-

gressive asthenia dyspnoea, edema of the extremities, hæmic murmurs, and vertigo are found. The tissues are flabby, though the external fat may be preserved. Subcutaneous, mucous membrane, and retinal hemorrhages are not uncommon. A peculiar odor of the breath has been noted; fever is often present, but usually is not high, and has no regular course. The ocular symptoms should be looked for, but especially early nervous symptoms, and particularly paresthesia. There is cyclical hemolysis. The three main groups of symptoms are gastrointestinal, toxic, and hæmolytic.

The Diagnosis of the disease, when well established is easy; but every effort should be made to detect the trouble in its early stages, when complications are not confusing, and the prospects for successful treatment are good. Routine examinations of the blood, stomach contents and feces will often disclose unsuspected conditions, and their origin. Myxœdema, cardiac disease, nephritis, and hepatic trouble may not be differentiated clinically from pernicious anæmia; but the blood changes in these diseases are not those which are found in pernicious anæmia. In ankylostomiasis there is only great dilution of the blood with alteration of the hemoglobin contents of the red cells. The corpuscles are small and less defined, while the color index is low. The blood conditions produced by the bothriocephalus are practically the same as those of pernicious anæmia, and the same may be said of nitro-benzol poisoning. In advanced malignant gastric disease the small cell type, both nucleated and non-nucleated, usually predominates. Aplastic anæmia, which is regarded by W. J. Stone, as a different disease and unaffected by arsenic, is claimed by others to be another form of pernicious anæmia. Lvenson gives its peculiarities as follows: Rapid course to a fatal termination; red cells markedly reduced; greater proportionate reduction in the amount of hemoglobin, with a low color index; leucopenia, with relative lymphocytosis; and absence of megaloblasts and usually normoblasts. I am strongly inclined to the belief that a plastic anemia is not a separate disease, but a fulminating form, so to speak, of pernicious anæmia. This can be easily understood if the presence in the blood of megaloblasts and normoblasts in pernicious anæmia is compensatory, for the blood may be so overwhelmed by toxins in aplastic anæmia

that reparative bone marrow changes are impossible. And it is very doubtful whether the parasitic anæmias should be entirely disassociated. It is better to adhere to one type of disease, with irregular or atypical cases, than to increase the nomenclature before we are fully justified in so doing. By remembering the insidious nature of pernicious anæmia, being on the lookout for its earliest manifestations, recognizing its complications, and not overlooking the importance of microscopic and chemical examinations, the diagnosis will, in the large majority of cases, be easily made.

The prognosis is bad. Cabot has little faith in treatment, stating that out of 337 cases under his observation three were alive. But Quincke's case, in which the red cells were reduced to 143,000, is said to have recovered, while W. J. Stone's case, in which the red cells were 296,000 and the hemoglobin 10 per cent., had remained well for two years in the sense that the blood had become normal and the patient had returned to arduous work. So called megaloblastic, and also normoblastic showers are of grave import. Complications render the prognosis much more serious. Although the outlook in the disease is still very gloomy, it is not unreasonable, with the increasing light which we now possess, to hope that the prognosis will be materially modified for the better.

From what has been ascertained about the disease, *prevention* is of the highest importance. Dental caries, all lesions in the mouth and adjacent cavities, and intestinal parasites should receive prompt attention, while the various morbid conditions which precede or accompany the anæmia must, if possible, be removed.

When the disease is diagnosed, *the treatment* should be thorough and active. Among the measures which bid fair to be most successful are those directed to the digestive tract. Careful dieting, suited to the requirements of the case, lavage of the stomach, colonic saline irrigations, hydrochloric acid, and antiseptics are emphasized. The sour milk diet has met with favor in some quarters. Mountain air, rest in bed, cheerful surroundings, stimulants, and general tonics have their place. Some experiments have been made which would seem to prove that cholesterol is antagonistic to toxo-lipoids and toxo-lecithids. Dr. Houghton reports a case of apparent recovery following cecostomy and colonic la-

vage. Alterative doses of calomel have been recommended. The X-ray has been advised, but is said to be uncertain or harmful if the bone-marrow changes of pernicious anæmia are compensatory. Caution has been urged in the use of serum from rabbits on account of the danger from psorospermiosis in these animals. It is possible that effective and safe serum may be found. Transfusion of blood, according to the technique of Dr. Geo. W. Crile, has its strong advocates. Defibrinated blood and artificial blood serum may be used, but are not so beneficial.

Apart from such drugs as are clearly indicated to fulfil a specific purpose, there are few medicinal agents which are serviceable. Iron and red bone marrow are discredited by many therapeutists, but may be administered if not productive of unpleasant effects. Although iron fails in a large majority of cases, I have taken some comfort in the fact that inorganic preparations of this metal have been proven to be capable of absorption. This is an opinion which I have always entertained and am glad to find confirmed. Above all drugs, however, arsenic is still pre-eminent in value. In Dr. Stone's case, previously cited, one-tenth of a grain of sodium arsenite was used hypodermically every four hours. The drug should be employed according to the well-known rules governing its action, and should be given a faithful trial. At the same time metals ought to be carefully given when the kidneys are diseased. Hirschfield states that he has used arsenic at intervals on a case for thirteen years, and that the use of the drug makes the prognosis more favorable.

Reviewing the various opinions expressed as to the essential nature of pernicious anæmia, and bearing in mind the remedial measures which at the present time appear to be most trustworthy, we are hardly justified in believing that the disease has its origin in the blood-making structures. The benefit, usually temporary, derived from arsenic, seems to be due to its power of influencing blood formation and general nutrition. The same may be said of the remarkable effects which the drug produces in many cases of splenic anæmia. It probably acts as a direct hæmogenic stimulant, but it is not a specific, nor a germicide, nor does it appear to reach the underlying first cause of pernicious anæmia. It would appear that the blood itself is affected before the bone-marrow. If this be true, there are morbid

agencies in the blood, and at least some of these toxins have their origin in the digestive tract. We can reasonably hold to this view until physiology and pathology have added to our knowledge.

BIER'S HYPEREMIA IN SURGERY.*

By HUGH H. TROUT, M. D., Roanoke, Va.

Before discussion the merits or demerits of this aid in the treatment of surgical diseases, it might be interesting to review briefly the life of the originator of this method, for from this we can at least learn to resect his theories, whether we can accept them or not.

Professor August Bier first came into prominence while working in the Clinic at Kiel, Germany, under the late Prof. von Esmarch, a name that will always be associated with the rubber bandage, modifications of which so largely enter into the production of passive hyperemia. From Kiel, Prof. Bier was called to Griefswald, but was soon selected to succeed Schede as Chief of the Clinic in the University of Bonn, where the greater part of his work has been done.¹ After the death of Prof. von Bergmann, only a few months ago, Prof. Bier was selected to fill the chair of Surgery in the University of Berlin, where, with the aid of this large Clinic he has under his observation an immense amount of material from which he is collecting additional facts concerning the various methods of application of treatment.²

Last August he was given the Kussmaul prize, and Prof. Czerny, in the presentation address, paid him the high compliment of stating that his name should be ranked with that of Lord Lister, and this in itself is enough to commend him to due consideration.³

The theory of chronic passive congestion of the lungs, as seen in certain diseases of the heart, being, to a large extent, a prophylactic against pulmonary tuberculosis, was first promulgated by Baron von Rokitansky in 1846.⁴ He expressed a belief that those cases showing an obstruction (cardiac, chiefly mitral stenosis) to the outlet of blood from the lungs very seldom, if ever, showed a tuberculous focus; while it has been asserted by other pathologists^{5 6 7 8} where one finds a pulmonary anemia, also due usually to a heart lesion, there one is apt to locate a

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tuberculous focus. On the other hand, Norris,⁹ and other pathologists, state their post-mortem findings do not bear out this theory of Rokitsansky, but when one recalls that the latter investigator, during his life time, performed thirty thousand autopsies, and for fourteen years gave special study to cardiac lesions and their effect on the pulmonary system,¹⁰ we are prone not to discard his views lightly.

It concerns us little whether this theory is correct or not, further than the fact of Prof. Bier having accepted it as true and decided to make use of the principle in the treatment of tubercular foci elsewhere; later extending it to the treatment of acute surgical infections.

In passing, it is of interest to note Prof. Bier does not claim the method to be a panacea, but simply states his belief in its being *an aid* to the already well founded principles of surgery, and can be used in conjunction with many of them; for example, perhaps the most striking is his insistence on the evacuation of pus before using hyperemia. If the directions are followed it can do no harm, but one must thoroughly master these and never think "if a little is good, more is better."¹¹

There are three methods of producing hyperemia, e. g.:

1. By placing a rubber bandage around the extremity on the side nearer the heart.

2. By means of a suction glass.

3. By the application of *heat*, especially dry hot air.

The first two produce a passive or venous hyperemia, while the last gives an active or arterial which is especially useful in chronic surgical infections.

The rules for the application of the rubber bandage may be briefly summarized at follows:

1. Wrap bandage around the extremity some distance from the diseased portion and be careful not to apply it too tight, and never constrict enough to cause any change of pulse below the point of application. Recently the use of the blood pressure apparatus has been suggested,¹² thereby finding out the degree of pressure and then allowing the mercury to drop 10 to 15 m.m. and use this as an index to the tightness of the bandage. Also, always be sure the distal extremity is warm and never cold.

2. Never allow the bandage to cause pain either at the point of application or in the dis-

eased part. It is best to change the position of the bandage from day to day, and always place a layer of cotton or gauze next to the skin to prevent the irritating effects of the rubber. It has been suggested to use a rubber gauze bandage, which would admit air in the place of solid rubber. If shortly after the application of bandage pain is not relieved some error has been made in method.

3. To produce a bluish edema, which should have entirely disappeared before the bandage or glass is replaced.

4. Always consult the patient's comfort and never try to do too much.

5. Keep a sharp outlook for the formation or retention of pus, and as soon as detected, evacuate.

6. If there is a sinus tract present be sure to have dressing on the wound loosely, and in the intervals between applications, have the opening covered with dry aseptic or antiseptic dressings; in other words, be careful not to have an additional infection, but at the same time have a dressing which will readily absorb the exudate.

7. Gain some experience with the simple cases first before trying the more serious ones.

8. The use of the method should never prevent the employment of other well-known surgical principles.

9. If time is an important factor in the treatment of the disease, more can be gained by the use of the knife, saw and chisel than by waiting for the effects of hyperemia; but such a course prevents any return of motility of joints, functions of renewed organs, etc., that are hoped for and obtained often by the use of hyperemia.

10. As a working basis, leave bandage on at first for two hours at a time twice daily and gradually increase so as to have the bandage left on, in some cases, about twenty out of the twenty-four hours—that is, ten hours at a time with two-hour intervals. However, no definite rule can be formulated for different cases, and the surgeon must decide the duration of time in each case according to the progress of the disease and the relief afforded the patient.

In addition to these, the points to be noticed with the application of the suction glasses are:

1. To have the glasses sterilized, which is best done by boiling.

2. If there is a sinus present, sugar sterile

vaseline, or boric ointment, over the skin to prevent the irritating effects of the discharge.

3. Be careful not to put on too much suction—certainly, never enough to cause pain or to produce a white edema of the skin; the bluish red color is what one tries to obtain here also.

4. Do not try to overcome contractures too readily.

5. Make the duration of application five minutes at a time, with a two-minutes' interval, and repeat this procedure six times, which will occupy forty-five minutes. This intermittent process is to be carried out twice a day.

In some cases better results have appeared to follow the application of the bandage one day with the use of the suction glass the next, in preference to the employment of either continuously.

It is interesting to note the changes in the blood after the application of the bandage or glass. There is an increase of all the constituents of the blood locally, a decided leucocytosis, especially with the multi-nuclear elements, and a distinct increase in the bactericidal action of the blood as well; this additional action has been explained on various grounds chief amongst which have been found—a higher opsonic index, local accumulation of anti-bodies, an increased phagocytic and alexin power of the blood.^{13 14 15} Which ever theory may be correct, it is in line with the modern teachings of immunity and infection, and a combination of them all is not impossible. Moreover, in animal experimentation the vast majority of animals live, if hyperemia is used after being inoculated with some virulent bacteria, while the control animals, without hyperemia, all die. This of itself is sufficient to establish the prophylactic truth of the method.¹⁶

Wright has suggested the reason of this treatment being especially efficacious in the treatment of tuberculosis cases is owing to the fact of its being a sudden release of auto-accumulated tuberculin into the general system, e. g., while the bandage or glass is being accumulated locally and the removal of the appliance is similar in action to a hypodermic injection of tuberculin.¹⁷

Whatever may be the truth of these various theories, all investigators combine in attributing to the method great pain relieving properties, and Schlatter reports 250 cases, every one of

which had relief from pain as well as other good results.¹⁸

These theories while instructive and attractive, are not what one needs to know when desiring to apply the treatment to a given case. So we will consider briefly a few of the cases in which the method has been found to be most useful. Tuberculosis in its various surgical forms will be first mentioned, and it is well to remember if a pulmonary lesion complicates the case there is some dispute as to whether the application of hyperemia does not increase the focus in the lung tissue; however, the consensus of opinion seems to be on the negative side of this question. In tuberculosis of the knee, elbow or shoulder joints, the bandage can be applied above the diseased portion for from two to ten hours twice daily; but observing the rules as cited elsewhere in this paper and remembering not to expect much improvement if there is a bone focus in the epiphyseal portion of any of the bones entering into the formation of the joints. No satisfactory method of applying this treatment to the hip has as yet been invented, but numerous ingenious attempts have been made. If there is a flexion of any of these joints, they can often be painlessly overcome by the use of suction glasses.

Everyone who has ever treated tuberculosis of the tendon sheaths, especially of the flexor tendons of the forearm, appreciates the grave prognosis for cure, but by using the bandage for several months there have been numerous and complete recoveries reported. In fact, the most satisfactory case under my observation with Bier's hyperemia is one of this class. Of course, time is, after all, the greatest therapeutic agent known, but here too, Bier's treatment seems to be an aid to this well recognized surgical principle. The work done in tubercular bone lesions is as yet too uncertain to report many successes. Tubercular glands of the neck which have not reached the stage of suppuration have disappeared with the use of the suction glass while those that have gone on to the stage of suppuration appear to heal more rapidly by means of hyperemia.

A great advantage claimed by this method of treatment is it does not destroy the line of defense afforded by the cervical lymphatics. Quite a number assert, with care, a mixed infection is prevented in those cases having a sinus, and a

smaller incision is required, which is a consideration with patients desiring cosmetic results.

Perhaps the most satisfactory cases for the general practitioner are those patients with boils or carbuncles. In such cases the suction glass is used, and there have been a large number of favorable reports made. It is especially recommended as a prophylactic, also for its ability to relieve pain, and the shortening of healing after opening and establishing drainage.¹⁸

It would certainly prove to be a blessing if successful in the treatment of tuberculosis of the testicle, for no one likes to even consider a castration, to say nothing of the lack of the effects of an internal secretion; however, only a few cases of improvement have been reported and these were those in which the epididymis was not much involved.

The good results following a simple laparotomy for tuberculosis of the peritoneum attributed to the hyperemia produced by the removal of the fluid, and it has been suggested to use a suture stop cock in the abdominal wall²⁰ to allow hyperemia to be repeated when necessary. It is also interesting to know that Kuhn has invented a mask for the treatment of pulmonary tuberculosis,^{21, 22} but this does not come within the scope of this paper.

The treatment has been used with much success in recent injuries, especially as a prophylactic in those in which there is every reason to expect an infection.²³ If a plaster cast has to be applied a window can be cut in the same and a suction glass used if necessary.

Recently the treatment has been extended to severe cases of frost-bite by means of the bandage and hot air, while burns are being treated by application of bandage;²⁵ its advocates claiming almost instantaneous relief of pain and consider the cicatricial contractures less. C. Ritter reported²⁶ a successful case with the use of the suction glass in an inoperable sarcoma of the neck and shoulder, but this appears too extreme and brings the diagnosis into question.

To summarize, there seem to be four points on which all authors agree, namely:

1. The method relieves pain, whether by infiltration of the tissue as in cocaine anesthesia,²⁷ by mental suggestion, or what not, is unknown.
2. It requires time.

3. No harm will be done if the case is carefully observed and rules followed.

4. It is not an indication against the removal of pus.

Before closing, I want to state that my object in presenting this paper is the hope of starting a discussion of this subject, and, if possible, to increase the interest manifested in Bier's work; for, theoretically, it should be practical, and, if practical, it is certainly theoretically correct.

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TETANUS—ITS PREVENTION AND TREATMENT.

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Much has been said and written on this subject, but since the average statistics show a mortality of 80 per cent., with thousands of cases occurring each year, all information having any bearing on its prevention or cure is valuable. The prevalence of a condition, especially at this season of the year, which jeopardizes the life of all its victims is my only apology for offering this subject for your consideration.

Tetanus, as we well know, is a microbic disease, invariably preceded by some solution in continuity of structure, either apparent or concealed, and characterized by painful and tonic and clonic spasms of the voluntary muscles, beginning with the jaw and showing marked exacerbations. By some it is claimed to occur at times as an idiopathic affection. These cases are either not tetanus at all, or traces of a pre-existing injury have not been found.

Tetanus being due to a bacillus which is anaerobic in character, (that is, one growing best without oxygen) explains the comparative frequency with which punctured wounds are attacked. In punctured wounds the bacilli are deeply placed in a cavity where air cannot enter, making a favorable place for the development of the bacilli and their toxins.

Nancrede points out that suppuration favors the growth of the tetanus bacilli for the pyogenic organisms consume oxygen, thus making an anaerobic culture medium.

The symptoms may occur a few hours after an accident, or they may not arise until several weeks have elapsed. Gowers speaks of a case in which the patient was dead within fifteen minutes of the accident, the victim having sustained only a laceration of a finger.

Although tetanus has been a well recognized disease for centuries—Hippocrates having accurately described the clinical picture—a clearer conception of the condition arose in the sixteenth century through the teachings of Amprose Paré, when surgery assumed a more important position and tetanus became a frequent complication.

It was not until 1880, however, when Sternberg announced that he could produce experimental tetanus in animals by injecting gutter water, that any light was thrown on its etiology.

The bacillus of tetanus was first observed by Nicolaier; he also discovered that the bacillus was found only in the wound or its immediate neighborhood.

Gumprecht first showed that the toxins attacked the spinal cord, and not the peripheral nerves, and that the clinical phenomena were the result of the action of the toxins on the cord alone.

Up to 1904 the organism had been isolated; it was known that the disease was produced by the action of the toxins generated in the wound, upon the spinal cord, and the toxins had been found in the spinal cord and peripheral nerves, but the path traveled by the toxins to reach the cord was a matter of obscurity, though it was generally supposed that the toxins traveled through the blood and lymph circulation.

Probably the most important recent contribution to our knowledge of tetanus and its development, was that made by Meyer and Ranson, who proved that the toxins were carried to the spinal cord, not by the lymphatic circulation, but by the nerves; and, further, that they are carried only by the motor, and never by the sensory nerves, and not by the lymph channels in the nerve, but in the protoplasm of the neurone. This recently-discovered fact, however, does not preclude the possibility of the development of tetanus after the division of the nerves above the point of inoculation.

Some of the toxin diffuses itself through the tissues till it comes in contact with the terminal filament of a motor nerve through the medium of which it is transmitted to the motor ganglia of the cord. Some of the toxin is taken up by the lymphatics, and enters the circulation, and in this way comes in contact with the motor nerve endings. The specific action of the toxins is the production of a condition of hyper excitability of the motor ganglia. This causes the tonic contraction. The clonic contractions are the result of reflex excitability.

The bacillus in itself is a slender micro-organism, with its spore attached to one end, making it appear like a drum-stick. It is motile and is anaerobic. It grows in the upper layers of the soil, manure, hay and on rusty, dirty implements. This statement seems contradictory, as it has been said that the bacillus does not grow in the presence of oxygen.

Bacteriologists explain this by the fact that

infections with tetanus are almost invariably mixed ones, and the other micro-organism which accompanies it absorbs the oxygen, thus making the soil suitable for its growth.

The poisons generated by the bacilli in a wound, are found to be toxalbumins, and the most deadly known substances. It has been found that .003 grain is sufficient to kill a man of 175 pounds; while it requires a half grain of strychnine.

It is hardly necessary to dwell on the symptoms of tetanus, for when once witnessed, it is never forgotten. The incubation period averages about seven days.

The first symptom in man is stiffness of the muscles at the back of the neck, sometimes preceded by a chill. In a few hours trismus sets in; after the masseter, the other muscles of the face and jaw and muscles of deglutition become affected, difficulty is experienced in swallowing even the mucus in the throat. The brow is wrinkled, the corners of the mouth are drawn upward, giving the patient the peculiar expression known as the risus Sardonius.

Next the muscles of the trunk are involved, then those of the back and finally, the muscles of the extremities, especially the lower extremities. There are the tonic and clonic muscular contractions, the former causing constant rigidity, while the latter are paroxysmal.

The clonic contractions may be brought on by the slightest irritation, as even a draft blowing on the patient. They occur at intervals of from a few minutes to a few hours.

Owing to the rigidity of the muscles of the neck and back, the patient during a severe convulsion assumes the position of opisthotonos, only the head and heels touching the bed.

The distress is added to, because the patient's mind is clear to the end, and to further add to the suffering, sleep is seldom possible.

The temperature is variable, usually elevated during the paroxysm; just before death, rises, sometimes as high as 110 degrees F. The pulse becomes rapid as the disease progresses, and finally the patient dies either of exhaustion or asphyxiation. All through this group of terrible symptoms the patient lies absolutely fearless, never thinking himself in the grip of a fatal disease.

In 1890 it was proven conclusively that animals under protection of an antitoxin could en-

joy immunity from tetanus. By experiment it was proven that there was present in the blood of artificially immunized animals an enzyme which, when mixed with virulent cultures of tetanus bacillus, destroyed its poisonous qualities. It is still a matter of discussion as to the precise manner in which antitoxin does good; some regarding the action as a purely chemical one in which the antitoxin actually neutralizes the toxin; others that the toxin and antitoxin only act on one another through the medium of the living body, and still others explain the action by Ehrlich's side chain theory. Suffice it to say that antitoxin is invaluable as a prophylactic, and while not quite so reliable as a curative measure, has beyond doubt, saved many lives which, under older methods, would have perished.

To successfully combat with tetanus we must begin with the injury.

Knowing the great virulence of the toxins, the rapidity with which they act, that the bacillus remains at the site of the injury and manufactures its toxins there, distributing it through different channels to all parts of the body, especially selecting the motor nerve trunks, we have a tangible array of facts which should lead us toward proper care of the case—at least theoretically, if not entirely practically.

Paramount in the treatment is *prophylaxis*.

Any suspicious wound (by suspicious wounds I mean those which have by any chance come in contact with soil, rusty instruments, manure, or the like; and especially punctured wounds) should be opened up immediately and thoroughly curetted, and an antiseptic applied to destroy the bacilli and their spores, if any remain.

From bacteriological tests the most reliable germicide in tetanus seems to be a solution of bichloride of mercury, 1 to 1,000, with one-half per cent. hydrochloric acid added, or strong solution of iodine, which has the advantage of extreme penetration. Continuous bathing with one and one-half per cent. carbolic acid solution is useful, but pure carbolic acid should never be used, as it coagulates the albumen of the tissues, thus sealing up any bacilli that may be present, and forming just what we do not want, namely, an anaerobic field. The result of treatment is directly proportionate to the lapse

of time between the first implantation of the germ and the institution of treatment.

Fully as important as the thorough disinfection of the wound is, the administration of antitoxin, for there is no better example of the frequently quoted axiom, "An ounce of prevention is worth a pound of cure." All patients with suspicious wounds should at once receive an injection of 10 c. c. of an antitetanic serum.

McFarland has shown experimentally that antitoxin in the form of dry powder sprinkled over an abraded surface in animals, then rubbed with pure cultures of tetanus is preventive in almost every case.

An investigation was recently made by the Journal of the American Medical Association, in which not a single case was found where antitoxin had been used that subsequently developed tetanus.

In the treatment of the disease we must direct our efforts in three ways—

First. Controlling spasm.

Second. Overcoming the toxin.

Third. Supporting the patient till symptoms subside.

Sedatives have been employed for decades in the effort to control the spasm, with varied success. Of these chloral and bromides are most reliable, while probably curara is third in importance. Chloroform is also used for anesthesia with good effect. I have seen better results from chloral internally than any other sedative, while chloroform gives temporary relief from the spasm and is a slight comfort to the sufferer in his last hours.

Many special treatments have been used to combat the toxins, by far the most important of which is the serum treatment. This treatment is based on the fact that the blood serum of an animal artificially immunized to tetanus, contains a body which, when mixed with a virulent culture of tetanus, destroys the virulence of the culture for susceptible animals. Facts to prove the efficiency of this treatment are fast being brought out. For several years previous to the serum treatment the mortality in Cooper Hospital was 100 per cent., but since its use the mortality is vastly less. In 1906 eleven cases were treated in this institution, six of which recovered. Four of the remainder were hopeless when admitted and died within a few hours. From observation, I am convinced that in the

serum treatment good results are almost invariably obtained if the dose is large and frequently repeated.

During 1906 a colored man was admitted to the wards of Cooper Hospital with fully developed symptoms of tetanus and a history of having punctured his foot with a wire nail one week previous. The patient was rigid when admitted. He had severe convulsions every few minutes; the jaws were locked and opisthotonos was marked. He was given 10 cc of anti-tetanic serum every two hours with ten grains of chloral and the same of bromide of sodium. The serum was given for two weeks day and night every two hours and for several days thereafter at intervals of four hours; then four times daily until the twenty-second day, when all treatment was stopped. He received in all about 200 injections or about two quarts of serum with no ill effects. He was discharged—cured.

Later the same year a man 33 years old was admitted with a history of having had a finger crushed while working on a building one week previous. His finger had been dressed by a physician and subsequently by his family—during the work he had worked in the rain and thought he had taken cold—his muscles being sore and stiff; but the day previous to admission he began having tetanic spasms which became more and more frequent. On admission the symptoms were typical of advanced tetanus, trismus, rigidity, opisthoros and frequent convulsions being present. He was given the same treatment as the previous case, but responded earlier, and after five days the dose was given every four hours for the following ten days and subsequently three or four times a day until 140 injections were given. He was discharged cured.

These two cases were undoubtedly acute tetanus and severe, but yielded to treatment and without the slightest ill effect. In the eleven cases treated during 1906 the only bad effect noted from the use of serum was in one case—a woman who had received 70 injections and developed an annoying urticaria, which soon subsided.

During the Civil War the mortality from tetanus was 90 per cent., no serum being in use at that time.

Packard and Meson have gathered together 1,126 cases in which serum was used and the mortality was 42 per cent.

Moschowitz found a mortality of 40 per cent. in 460 unselected cases treated with antitoxin, among which were many advanced cases.

In the absence of serum the carbolic acid treatment of Bacelli seems to be next best, but has not proven very satisfactory in this country. In Italy flattering reports have been given. It consists in subcutaneous injections of 1 per cent. solution of carbolic acid about the area of infection in such quantities and intervals that the patient receives 80 grains in twenty-four hours. It is claimed in dilute solutions carbolic acid does not coagulate albumin and that the results are gratifying.

In deciding the virtues of any mode of treatment we must draw conclusions from results, and in this disease the mortality list is the convincing argument. With a mortality of 80 per cent. without antitoxin and 40 per cent. since its use, the conclusion is obvious.

Cor. Broad St. and Red Brook Ave.

CANCER OF THE CERVIX FOLLOWING SUPRA-VAGINAL HYSTERECTOMY FOR LARGE FIBROID WITH EXTENSIVE ADHESIONS.*

By EDWARD T. HARGRAVE, M. D., Norfolk, Va.

My excuse for reporting this case is to call your attention to the danger of leaving behind the cervical stump when the uterus is removed for fibroids, even though the cervix appears normal and there is no microscopic evidence of degeneracy in the tumor.

Dr. Noble (*Transactions A. M. A.*, 1906) states: "In the last 100 cases of fibroid tumors operated on by me by abdominal hysterectomy, there were five cases of adeno-carcinoma of the body of the uterus; one case of epitheliomatous infiltration of a fibroid tumor arising from the adeno-carcinoma of the corpus uteri by metaplasia; and two cases of cancer of the cervix, which makes six cases of cancer of the body of the uterus to two of cancer of the cervix, and which constitutes eight per cent. of fibroid tumors complicated by cancer of the uterus—a striking experience." True conservatism demands the removal of every uterine fibroid soon after diagnosis, unless the presence of some other disease renders the procedure useless or dangerous. The mortality following the ope-

rations indicated is very low, from one-half to three per cent.

March 1, 1906, A. N., negro woman, sixty-one years of age, domestic; was admitted to the Norfolk Protestant Hospital, with following history: Has been married twenty-five years, no children nor miscarriages, negative family history, and has not had any serious illness in her life. About fifteen years ago she first felt a lump in her belly, and began to have her sickness twice each month. Physicians informed her that she had a tumor, but that it would give her no trouble after the menopause. Vaginal examination revealed a small cervix of normal consistency and appearance. Bimanual examination demonstrated the presence of the tumor completely filling the pelvis and extending to the liver. Chest was negative, except a hypertrophy of left ventricle. Urine showed a small quantity of albumen, lessened output of urea (about thirteen grams) and marked diminution in daily secretion.



Microscopic examination showed few granular casts, and free epithelial cells. The patient has been suffering very much of late with abdominal pain, obstinate constipation and painful urination.

The usual preparatory treatment was insti-

*Read before the Norfolk [Va.] Medical Society.

tuted, and March 3, 1906, the usual median incision was made and tumor exposed. The omentum was found adherent to the anterior surface of the tumor, and its vessels were as large as large lead pencils. The bladder was crowded laterally, and was found adherent to the tumor and side of pelvis. Numerous, dense adhesions between the tumor and large and small intestines were divided. Appendix was normal. The tumor was firmly wedged in the pelvis below, but its upper lobe was movable. Weight, nine pounds, eight ounces. Supra-vaginal hysterectomy was done with removal of appendages.

After the operation, while transferring the tumor to a specimen jar, a dark gelatinous substance was seen protruding from the cavity of the uterus, and it, with a specimen of tumor was sent to a pathologist for examination. Unfortunately the specimen was lost. The woman left the hospital on the eleventh day, and a week later resumed her household work.

August 10, 1906, she came to my office to inform me that her sickness had returned. Vaginal examination revealed a hard, ulcerated cervix, with involvement of anterior vaginal wall. Surgical intervention was declined. September 15th she was again at my office, and examination showed that the process had invaded the bladder, forming a vesico-vaginal fistula. The cervix was examined before the operation, for any abnormality, as it is my custom to do a complete hysterectomy when the cervix has been lacerated or the seat of any disease process. This woman's age and general condition demanded a quick operation, and as her cervix appeared perfectly normal, it was left behind. She died from cancer the latter part of January, 1907.

437 *Freemason street.*

ELECTRO-DIAGNOSIS.*

By F. K. TRAVERS WARRICK, M. D., Richmond, Va.
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The importance of electricity in diagnosis is more apparent in nerve-muscle conditions. As the effect of the current is not visible, the results of the passage of electricity through the nerve are designed in terms of muscular contraction.

From the experiments on the frog, we have

*Read before the Richmond Academy of Medicine and Surgery, June 9, 1908.

been able to tabulate a definite sequence of normal reactions resulting from the different strengths of current employed, the popularity of the active nerve electrode, and on making and breaking the circuit. These tests are purely quantitative. With the faradic current, qualitative changes are also seen. Any varying from this normal means, therefore, a lesion of nerve structure, and the time of the test from the onset of the disease and the amount of electrical change at the time give the physician an assistance in prognosis also. We can, therefore, locate spinal, central and peripheral lesions by the degeneration and atrophy as well as by means of anesthesia and hyperesthesia.

When we begin a test, first see that the apparatus is all right. Moisten electrodes with soap and water to decrease skin resistance. Get a good light, and have a table of normal reactions at hand. Next, locate the exact spot for motor points to be used. Begin testing with a weak current, the active electrode small to concentrate current and the indifferent electrode large and over the spine. Make and break the current and change polarity after each trial, increasing the strength until the current is strong enough to elicit a response. Then compare this with the sound side, if there is one. Test make and break for both positive and negative electrodes. Record this and repeat with stronger currents, noting each response on the increase of current. On comparison with the normal we have a definite series of alterations. A test repeated later shows if the degeneration is changing—both quantitative tests being recorded.

These tests are an aid in many morbid conditions, and with the clinical aids of the laboratory and the signs and symptoms, our task of diagnosis is lightened.

There are other methods of some value, notably in the diagnosis of pus, but other and easier methods yield equally good results.

These reactions in their abnormal form are not always exact and, therefore, we must not be led astray by not getting the exact opposite to the normal. We must also bear in mind that electrical impulses can pass where nerve impulses do not, and also that nerve impulses can pass without the passage of electrical impulses.

Also, we must remember that a normal muscle reaction is not like a nerve reaction; therefore, the degeneration is different.

PRINCIPLES OF SURGERY.*

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LECTURE XLVII.

(Continued from last issue, page 189.)

Anesthesia and Anesthetics—General and Local Anesthesia: Various Drugs Employed, with Their Therapeutic Action, Indications for Use, Methods of Administration.

GENERAL RULES FOR THE ADMINISTRATION OF CHLOROFORM AND ETHER.

The administration of an anesthetic is an art acquired by practice, and no one can be taught it except by experience. The following suggestions are selected from various authorities, or are the result of personal observation.

The patient's stomach should be empty, but his resistance not weakened by long fasting. The last meal should be taken from four to six hours before the operation. The bowel should be emptied by a purgative given the night before, or better, thirty-six hours prior to the administration of the anesthetic, followed by an enema or saline the morning of the operation.

When possible, the anesthetizer should see the patient prior to the administration of the anesthetic. This tends to increase the confidence of the patient in the anesthetizer, and affords the anesthetizer an opportunity to observe the normal respiratory and circulatory movements of the patient.

Morphine should not be given as a routine practice before the administration of every anesthetic. It may be given with advantage, however, if the patient is nervous or frightened, if he is addicted to opium or alcohol, or if he is likely to suffer great pain on recovering consciousness.

If stimulants, such as strychnine or whiskey, seem indicated immediately before the operation, they should be given by mouth.

The patient should be lightly and loosely clad, with no constriction around the chest or waist to impede respiration.

The anesthetic should not be administered until it is certain the surgeon will be ready to begin the operation as soon as the patient is in condition. If either surgeon or patient has to wait, humanity demands that it be the sur-

geon; time to him may be money, but time to the other may be life.

In moving a patient after he is anesthetized, care should be taken to see that the head is kept in the proper position, and the respiration and heart action not interfered with.

The anesthetizer, before giving the anesthetic, should see that provision is made for the prompt admission of fresh air into the room, and that other restoratives are at hand, in case the patient does badly. Drafts and exposure should be avoided, the patient kept warm and body heat maintained.

The room in which the anesthetic is given should be kept perfectly quiet, and all instruments and apparatus likely to frighten the patient should be kept carefully out of sight.

The ether or chloroform employed should be the purest obtainable: it should be the product of well-known and reliable manufacturers.

An anesthetic should never be given except in the presence of a third party. This is especially true when the patient is a woman, as sexual excitement is often produced, resulting in the belief that improper liberties have been taken.

An anesthetic should never be given with the patient in the sitting posture, but the patient should be lying comfortably, flat on his back, with only a small pillow under his head.

The mouth should always be examined, and false teeth, quids of tobacco, chewing gum, whistles, buttons, or other foreign bodies, if present, removed.

The patient should be told to close his eyes, as the vapors of the anesthetic agent may be irritating, and also because it prevents the anxious watching of each movement of the anesthetizer.

The anesthetizer should talk pleasantly and encouragingly to the patient when beginning the anesthetic, at first diverting the attention by discussing some subject of interest, and later telling the patient that he is becoming drowsy, that he is losing consciousness, that he is asleep, —in other words, use hypnotic suggestion.

Never tell the patient to count or breathe deep, for by so doing a feeling of suffocation is sure to follow and the patient is apt to struggle or become boisterous.

When the anesthetic is begun, the patient should be free to move his arms or legs. Should he hold his breath until the veins become tur-

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

gid and prominent, the anesthetic should be withdrawn until the breathing becomes normal. Should he become excited and struggle, it is better not to attempt to absolutely restrain his movements, but rather to guide and control them so as to prevent him throwing himself from the table. As he becomes unconscious, he should be held in position by manual force, and later he should be fastened with bandages or straps so as to keep him in position.

As to the rate of administration, chloroform should be given slowly, with free admixture of air. Slow etherization possesses no advantages and frequently prolongs the stage of excitement.

There is no certain way to tell when the patient is sufficiently under the anesthetic for the surgeon to begin the operation. The best test is relaxation of the jaw. The eye reflex is of little value, and the practice of touching the conjunctiva to see if the patient will wink should be prohibited.

The nausea and shock produced by the anesthetic are dependent not only on the length of time the drug is administered, but also on the amount that is given. The least possible quantity to enable the surgeon to do his work continuously and satisfactorily is the proper amount.

Some stages of an operation are extremely painful, while others cause but little discomfort. An experienced anesthetizer should learn by observation at what stage of an operation to have the patient profoundly under the anesthetic and at what stage he can be allowed to partially come from under its influence.

Sometimes, through an error of judgment or owing to the development of unexpected complications, the patient may not be in a condition for the surgeon to continue his work. It then often happens that he peremptorily orders the anesthetizer to give more of the anesthetic. His orders should be taken "*cum grano salis*," for they do not relieve the man behind the mask of his responsibility. He should do what he thinks best or give up the case.

It is better for the anesthetizer to watch for symptoms and prevent them than to have frequent recourse to tongue forceps, the oxygen tank, or other restoratives. From the beginning of the administration he should watch for

signs of danger. His attention should never be diverted by any incident of the operation. It is well to watch the character of the pulse, but it is far more important to watch the respiration, and above all, the face, as the earliest indication of danger. A rapidly dilating and fixed pupil is a danger signal, while a pupil contracted to a normal size or a little less indicates surgical anesthesia.

The occurrence of a sudden pallor or change in the pulse rate, lividity of the face or embarrassed breathing, indicates danger and calls for the immediate withdrawal of the anesthetic. A single additional whiff may mean the difference between life and death. If the patient does not breathe properly, the anesthetizer should put his fingers at the angle of the jaw and push it forward and upward. If this does not answer, the tongue should be caught with a piece of gauze and pulled up towards the nose, a little to one side. Bruising and lacerating the tongue with forceps is a barbarous practice. It should be remembered that there may be movements of the chest similar to the normal, though the glottis is closed and no air is entering the lungs.

Should the patient appear likely to vomit, his head should be turned to one side and the anesthetic withdrawn until the nausea disappears. If vomiting occurs, remove any ejected matter left in the mouth and continue the anesthetic.

If, during the operation, the patient shows evidence of having fluids or solids in the stomach, it is well at the completion of the work, to wash out the stomach with saline or weak bicarbonate of soda solution.

The anesthetizer beginning the administration should continue it until the completion of the operation. When a second anesthetizer takes the case with the patient under the influence of the drug, he is at a disadvantage in that he is not familiar with the condition of the patient in the earlier stages of the anesthetic.

NITROUS OXIDE.

Nitrous oxide gas, (N_2O), or laughing gas, is a colorless gas, with a slight sweetish taste and smell. It is purchased in tanks, and administered by means of a special apparatus. It produces anesthesia in less than a minute, and recovery is equally rapid when it is withdrawn.

It is sometimes followed by a headache, but rarely, if ever, by nausea. It is the safest anesthetic known, as only 14 deaths are recorded from four or five million administrations. Until recently, the agent has been used principally by dentists, but it is now being more extensively employed by the general surgeon.

The objection to it is the short period which anesthesia can be maintained, the complicated apparatus necessary to give it, and the cost of the gas. It does not give complete relaxation, and cannot, for this reason, be used for operations on the rectum or perineum, as the patient cannot be kept in the lithotomy position owing to the rigidity of the legs. It is frequently employed as a preliminary to ether, in order to avoid the unpleasant sensations to the patient, and it is also used to open abscesses and bone felons, to break up adhesions of joints, to reduce dislocations, to remove gauze from the abdomen, and to dress painful wounds..

ETHYL CHLORIDE.

Ethyl chloride, (C_2H_5Cl), under pressure, is a colorless, volatile liquid, which boils at $54.5^\circ F$. It is very inflammable. As a general anesthetic, it is rapid in its effects, anesthesia being produced in from 30 seconds to 3 minutes, which lasts from one to three minutes, is recovered from rapidly, and as a rule, without any unpleasant after-effects. Since its discovery, opinion as to its merits has varied from time to time, it being alternately condemned, and again, more or less generally recognized as a valuable agent. At present, the tendency is to regard it as not nearly so safe as nitrous oxide, though safer than chloroform or ether. Ware reported 12,436 cases, with one death; Seitz, 16,000 cases, with one death, though within the last few years there have been several deaths in one city attributed to the drug. Its place in surgery is as a substitute for nitrous oxide when this agent is not at hand. Its advantages are its safety as compared with chloroform, the ease and simplicity of administration, and the fact that no cumbersome apparatus is necessary. Infants and the aged take the drug as well as young adults. For some operations the anesthetic may be administered and withdrawn and re-administered over and over again for 10 to 30 minutes. Respiratory obstruction is regarded as contra-indication.

It may be given either through a specially

constructed mask or sprayed on gauze placed over the nose, exactly as ether is administered by the open method. As a rule, it does not produce complete muscular relaxation; often the pupils never dilate; the conjunctival reflex is rarely abolished; and the laryngeal reflex is said to be always retained.

HYOSCINE (SCOPOLAMINE) MORPHINE ANESTHESIA.

Hyoscine and scopolamine are identical substances, and to produce general anesthesia, this drug is combined with morphine and administered hypodermically in doses of 1-6 grain of morphine and 1-100 grain of hyoscine, freshly prepared, and given in divided doses, one hour and one-half hour, respectively, before the beginning of the operation. It may be given in three doses, the third dose being administered at the beginning of the operation. The method has been enthusiastically praised, just as enthusiastically condemned, and as yet has not received a definite place among anesthetic agents. Large doses are certainly dangerous, and if the drug is used at all, it should be given only as an aid to anesthesia, and never in sufficient amounts to produce complete narcosis of itself. There have been reported many deaths undoubtedly due to the drug, and it should never be administered to a patient with pulmonary edema or with any acute condition of the throat which interferes with respiration; nor should it be given patients under 16 or over 60 years of age. Used as a preliminary to anesthesia, the amount of chloroform or ether required is considerably diminished, the post-anesthetic sleep prolonged, and in the few cases in which we have used the method, no special after-effects were noted.

If symptoms of poisoning occur, the treatment is that of morphine and hyoscine poisoning.

LOCAL ANESTHESIA.

Cold.—Cold may be employed by applying ice to the skin, or spraying the part with ether, ethyl chloride, or some other agent which evaporates rapidly. The method is of limited value, as its use is attended by considerable pain, and the tissues are made so hard and resisting that they are difficult to penetrate with an aspirator, or to divide with the knife. It should be needless to say that freezing is not logical as a preliminary measure to the use of the actual cau-

tery. Cases have been known, however, where a surgeon used ethyl chlorid spray on a chancreoid before he cauterized it with a hot iron.

Cocaine.—Cocaine is the active principle of *erythroxylon coca*. The preparation usually is a white crystalline powder, readily soluble in water. It is used by applying it externally to mucous surfaces, or by injecting it hypodermatically into the skin or deeper structures. It acts more promptly and efficiently when the solution is warm and contains sodium chloride to make it isotonic, and adrenalin to cause local constriction of the blood vessels and prevent its rapid absorption and removal from the field of operation. Solutions of cocaine are unstable, and deteriorate if kept for any length of time, or if exposed to any extreme of heat. They should, therefore, be made fresh for each operation, and should not be boiled. There are tablets on the market containing cocaine and adrenalin, which can be sterilized by putting them in a tube, plugging both ends with cotton, and subjecting to dry heat. By dissolving one of these tablets in a definite amount of normal saline solution, the surgeon can readily and quickly extemporize a solution of the strength required for the case in hand.

Cocaine in toxic doses acts as a cardiac and cerebral depressant, and produces death by paralysis of the heart. The best antidote to its action is amyl nitrite by inhalation, or nitroglycerine by hypodermic injection. It has been found that the danger of poisoning is not so much due to the amount of the drug introduced, as to the strength of the solution employed. Cocaine forms a combination with the protoplasm of the cells which is fairly stable and breaks down only after some time. If a weak solution is used, the cocaine combines with the tissue at the point of injection and has only a local action. It is only when a strong solution is employed that the drug reaches the general circulation and acts on the higher centers. The danger of its constitutional action is further lessened by the addition of adrenalin, and is practically eliminated when it is possible to arrest the circulation in the field of operation by the application of a rubber constriction.

Local anesthesia may be effected with cocaine by four different methods:

1. *External Application.*—This is possible only when the surface is covered with mucous

membrane, and is especially suited to operations on the eye, nose, throat and urethra. Usually a four per cent. aqueous solution is employed. It may be dropped in the eye; sprayed in the nose or throat; or applied to the urethra on a bit of cotton.

2. *Infiltration.*—This is employed to anesthetize the skin and subcutaneous structures, and is effected by injecting 0.1 per cent. of a cocaine solution into the part by means of a large hypodermic syringe. The "Sub-Q" syringe is a cheap and effective instrument, and should form part of every surgeon's armamentarium. It has a glass barrel and an asbestos piston; hence can be boiled without injury. In infiltrating the skin, the point of the needle should be introduced obliquely into, but not through, the skin, so that the solution will be intracuticular, but not subcuticular. As soon as two or three drops are injected, a white wheal results. The needle should then be withdrawn and reintroduced at the margin of the wheal in the direction of the proposed incision. As soon as the skin is insensible, it should be divided, and the deeper structures anesthetized by inserting the needle slowly and forcing a few drops of solution ahead of it as its point advances.

3. *Nerve Blocking.* This consists in injecting a few drops of one per cent. solution of cocaine directly into the trunk of a sensory nerve, thereby, for a time, abolishing its function. The method is sometimes employed in amputations before dividing large nerves, to avoid shock, but its principal and most successful application is in certain major operations like the radical operation for hernia, where the nerve supply of the part is such that the branches can be isolated and injected, thus rendering it possible to do extensive work absolutely without pain or discomfort to the patient.

4. *Spinal Anesthesia.* This is effected by injecting ten or fifteen drops of a two per cent. solution of cocaine into the subdural space of the spinal canal. A needle is introduced one-fifth of an inch to the right of the spinous process of the fourth lumbar vertebra, and forced forward, upward and inward for two and a half or three and a half inches, until the cavity is reached, which can be demonstrated by the escape of cerebro-spinal fluid. The method causes paraplegia from the diaphragm down, which lasts about forty-five minutes. Anesthesia is so complete that amputation of

the thigh, hysterectomy, or prostatectomy can be done practically without pain.

Many substitutes have been offered for cocaine, notably eucaïne, but cocaine has held its place and increased in popularity.

The advantages of operating under local anesthesia are the freedom from the danger of a general anesthetic, and the absence of nausea, and vomiting which so often follow its use. There is also less need for trained assistance. A man in the country, with a hypodermic syringe and a case of pocket instruments, can safely and satisfactorily operate on a case of strangulated hernia, with only the help which can be rendered by members of the household.

The disadvantages of operating with local anesthesia are that it takes more time, which is a bar to its routine use in a busy clinic; that it imposes a greater strain on both patient and surgeon, the one afraid of being hurt, and the other finding it necessary to constantly reassure him or divert him; and finally, that if the operator meets with unexpected complications or experiences any unusual difficulty in doing the work, the patient will recognize the fact and not be disposed to be charitable in his immediate or subsequent criticisms. The successful use of cocaine in major operations requires a personality to inspire confidence, a thorough knowledge of anatomy, and an ability to do clean dissection without injuring or bruising tissue.

Analyses, Selections, Etc.

Amebiasis, Its Symptomatology, Diagnosis- Sequelæ and the Use of Formalin and Cop- per Phenol Sulphonate in the Treatment.

Dr. John L. Jelks, Memphis, Tenn., in a paper read before the American Proctologic Society at Chicago, Ill., June 1, 1908, calls attention to the greater prevalence of amebiasis in the South than had been attributed by other students. Marked differences have been ascribed to the ameba as to its character and actions in different cases, especially with reference to their phagocytic properties and their motility. Associated infection plays an important role in many cases, and to this mixed infection the difference in character of ulceration in the higher parts of the colon, and that in the rectum is due.

These cases occur in nests, in the low marshy districts, in the sparsely settled alluvial sections, and in the suburban mill districts of the city. None of the cases in the city were residents of the highland portion, and all of them partook of fresh vegetables which were grown in the bottoms and washed with water from shallow wells.

Dr. Jelks views with suspicion all cases of violent acute dysentery or chronic diarrhea with mucous discharge. He states with emphasis that he has not found the symptoms, dysentery and diarrhea, essentials to the existence of amebiasis; on the other hand, he has encountered cases in which constipation or obstipation was complained of, and remarks that this statement is contrary to the generally accepted teachings.

In the majority of cases, however, the patient complains of, and the predominant symptom in chronic cases is that of recurring diarrhea which has existed for several months or years, associated with a quantity of mucus, and that occasionally stained with blood.

The symptoms in malignant, acute cases are quite severe from the onset, the patient suffering great exhaustion from numerous movements, and the septic condition which soon ensues. Sometimes large casts of mucosa are expelled, as also casts of mucus and fibrin. These latter are most fatal, and should patients recover from the acute symptoms, very often lapse into a subacute or chronic condition which may last for years with periods of abatement and exacerbation of symptoms.

After reviewing the symptomology, Dr. Jelks then states that a diagnosis might be overlooked without aid of the microscope, which if put into more general use by clinicians, in the South, especially, will reveal many heretofore unsuspected cases of this origin.

In reciting the sequellæ and gross gut pathology in a series of twenty-five cases, the author says that in two recently treated cases, small openings or ulcers extended into extensive sub-mucous abscesses.

Often the gut mucosa presents only slight ulceration, but a general red granular, or perhaps edematous appearance, and though these are amebic, a mixed infection is thought accountable for certain phases of this process, for the ameba prefers the juicy sup-epithelial structures, and pathology is chiefly sub-epithelial.

The colon bacilli and streptococci are accorded importance in the inflammatory process, especially in the rectum; thus is explained the great difference in the character of the ulcers found there and those seen in the higher portions of the colon.

Autopsy in one case showed marked strictures and thickening of rectal wall; while in the splenic flexure, which was the seat of fatal perforative ulceration, the ulcers were sharp cut, round and oval through a thin gut with only lightly adherent omentum covering the perforated gut.

Periods of exacerbation and abatement of symptoms in these chronic cases are thought due to several causes, chiefly the difference in activity and virulence of different generations of this protozoa, certain differences in activity, sporulation and in the process of encystation.

In the twenty-five cases cited, four cases were noted in which infection in the liver was diagnosed, two of which were verified by operation; five cases of stenosis, more or less marked; two cases of valvular stenosis; two perforations, one of which was verified by autopsy, one case in which casts of mucosa were expelled; one case from which seven adenomata were removed from the upper rectum; in three cases jaundice was marked; three cases had hemorrhoids, and one case had rectal abscess and fistula; one case suffered an impaction in the sigmoid, the size of a fetal head, the result of stenosis below and thinning of the musculosa above; one case had infected gall bladder which required drainage; in four cases appendiceal involvement was diagnosed; in one case in which appendicostomy was performed, adhesions were found, the result of an attack since the dysentery was established; and in this case great thickening of the peritoneum and a tubercular family history afforded reason for suspecting in this a tubercular complication. However, Lewis' law could not be verified.

In the treatment, the author first refers to the importance of selecting a proper diet for these cases, and then refers to the use of formalin and boracic acid solution, and formalin and copper phenol-sulphonate solution, in high irrigations through a recurrent tube which he has devised specially for that purpose. He also refers to treatments through the sigmoidoscope with silver nitrate followed by the instillation

of boracic acid and aristol, or iodoform and bismuth sub-nitrate and olive oil.

The author concludes that the washing away of necrotic material and debris, as also the infecting agents is an important matter in the treatment of these cases by irrigation, and says these irrigations stimulate the vaso-motor supply, relieve passive congestion and stasis, increase the amount of fresh blood to the inflamed structures, and perhaps aid in the development of antitoxic bodies.

Orphol for Diarrhea of Chronic Enteritis.

Professor Boas "Diseases of the Intestines" (American edition by Dr. Seymour Basch; D. Appleton & Co., New York, 1904) says in regard to the diarrhea of chronic enteritis: "The use of preparations of chalk is especially valuable when there are eructations of hydrochloric acid, for here the sodium preparations are contraindicated on account of their laxative tendency. A combination of chalk mixture with bismuth has been highly recommended. I prefer the betanaphtholate (orphol). The following formula is unobjectionable and appropriate:

R. Calcii carbon.

Calcii phosph.....aa 25,0

Bismuthi betanaphthol... 5,0

M. S.—One teaspoonful three times a day.

Book Notices.

Medical Gynecology. By HOWARD A. KELLY, A. B., M. D., LL. D., F. R. C. S., Professor of Gynecological Surgery, Johns Hopkins University, and Gynecologist to the Johns Hopkins Hospital, Baltimore, etc. With 163 illustrations, for the most part by Max Broedel and A. Hoen. New York and London. D. Appleton & Co. 1908 Large 8vo. 662 pages. cloth.

No one could have been chosen as a more suitable author than Dr. Kelly for such a book as this; and the result is that it is a masterpiece every-day work for the general practitioner. It is his help in diagnosis, in prognosis and in treatment. The general physician who is without this book is like the poor man without a dollar. The first chapter relates chiefly to gynecological examinations, etc. Then follow chapters on hygiene of infancy and childhood: on puberty and occupation—which chapter it would be well to have intelligent mothers to read. Menstruation and its disorders occupy the first five

succeeding chapters—in the last of which is a section on extra uterine pregnancy. Constipation, headache, insomnia, obesity, backache, coccygodynia and acute infectious diseases as a cause of pelvic disease are subjects of the next three chapters. Then the following are considered in order named:—Vaginitis, vulvitis, cervicitis, endometritis, pruritus, vaginismus, masturbation, uterine displacements, pelvic inflammatory disease, sterility, gonorrhea, syphilis, abortion; injuries and ailments following labor, fibroids, cancer, cystitis, functional nervous diseases, association of appendicitis with pelvic disease, splachnoptosis, movable kidney, and post operative conditions. We give this full table of contents in order that the doctor may see for himself the scope of the work, which is illustrated wherever necessary. This book, according to its title, is of the highest value to doctors who have to deal with woman's diseases of non-surgical or at most of minor surgical importance. It is profusely illustrated by drawings from photographs and systematically arranged. Dr. Kelly has added to his work the help of a number of other authors in their special fields.

Bier's Hyperemic Treatment in Surgery, Medicine and the Specialties. A Manual for its Practical Application. By WILLY MEYER, M. D., Professor of Surgery, New York Post-Graduate Medical School, and Hospital, etc. and PROF. DR. VICTOR SCHMEIDEN, Assistant to Professor Bier, University of Berlin, etc. Illustrated. Philadelphia and London. W. B. SAUNDERS Co. 1908. 8vo. 209 pages. Cloth, \$3 net.

For many years Dr. Meyer has been using Bier's treatment so successfully in a number of cases that one is surprised that the method is not generally adopted in this country. Beside his own preparation for its use in the clinics of Professor Bier, he associates with him in the authorship of this Dr. Schneider, who has for years used the method under Dr. Bier's own observation. The principles governing its use, as well as the methods of application to various parts of the body are given in detail. It seems applicable to a great variety of diseased conditions, and a chief object of the book is to popularize the treatment with doctors of this country. While it may call for a specialist to attend this class of work—simply because of the time required for applications—the principle of hyperemia is explained, and the apparatus need not be very expensive. The book is well illus-

trated, and calls for reading by every doctor. There is evidently, from the records of cases treated by this method, much of practical value in it.

International Clinics. Edited by W. T. LONGCOPE, M. D., with many collaborators, Vol. II., 18th series. 1908. Philadelphia and London. J. B. Lippincott Co. 1908. Cloth. 8vo. 304 pages.

This quarterly volume of illustrated clinical lectures, etc., well maintains the valuable record of the series, covering many subjects in treatment of diseases, Medicine, Surgery, Gynecology, Ophthalmology, Dermatology, Orthopedics, Pediatrics and Pathology.

Modern Medicine—Its Theory and Practice, by American and Foreign authors. Edited by WILLIAM OSLER, M. D., Regius Professor of Medicine in Oxford University, etc. Assisted by THOMAS McCRAE, M. D., Associate Professor of Medicine and Clinical Therapeutics, Johns Hopkins University, etc. VOL. IV. **Diseases of the Circulatory System—Diseases of the Blood—Diseases of the Spleen, Thymus and Lymph Glands.** Illustrated. Philadelphia and New York. Lea & Febiger, 1908. 8vo. 865 pages. Cloth, \$6 net. Leather, \$7 net. half Morocco, \$7.50 net.

The physician who seeks to keep up with the advances in medicine which have been systematized does himself great injustice who does not provide himself with such a series as these volumes. There will be seven of them. The title of each volume contains a statement of its contents. Dr. Osler has become such an authority in Medicine that we note with interest his contributions of four chapters in this volume, relating to acute endocarditis, diseases of heart, valve diseases, diseases of arteries, and aneurism. Parts II. relating to blood diseases, such as pernicious and secondary anæmia, chlorosis, leukemia, purpura and hemophilia—and III. relating to diseases of the spleen, the thymus and the lymphatic glands—are very decidedly instructive and valuable. A good index is appended to each volume. This system of seven volumes will indeed be an almost complete library on the Practice of Medicine.

Practical Guide to the Examination of the Ear. By SELDEN SPENCER, A. M., M. D., Instructor of Otology in Washington University, etc. With an Introductory Chapter by H. N. Spencer, M. D. LL.D. Professor of Otology, Washington University. C. V. Mosby Medical Book and Publishing Co., St. Louis. 1908. 12mo. 66 pages. Cloth.

This brochure seems intended especially for

class room uses by those beginning the study of otology. But the five full page plates and the additional illustrations, in connection with the text, make it a useful help to the general practitioner who is forced to examine the ear. The book is intended to give the natural appearance of parts, what to look for in examinations and how to do it.—thus greatly assisting in the diagnosis of diseases of the ear. It is helpful also in tracing the relationship of ear diseases to diseases of other parts.

Surgical Therapeutics, By EMORY LANPHEAR, M. D., Ph. D., LL. D., Professor of Surgery, Hippocratican College of Medicine, etc., St. Louis. Chicago. The Clinic Publishing Co. 1907. 12 mo. 396 pages. Cloth.

As the author himself remarks, "*Practical Suggestions for the Management of Surgical Cases*" would be a more descriptive title for this book. It undertakes to describe the proper management of a surgical patient before, after and without operation; and contains so much of everyday useful practical advice as to be valuable to practitioners of medicine and surgery alike. In the presentation of subjects, the author has arranged them, as far as possible, in an alphabetical order. The sections on anesthesia, and on the treatment of wounds are about the longest in the book—each of these occupying over 30 pages. The whole is carefully indexed, and helps materially to look up a point. To the general practitioner especially, who has to deal with surgical cases, this little volume will prove particularly useful.

Subcutaneous Hydrocarbon Prothesis. By F. STRANGE KOLLE, M. D. The Grafton Press. New York. 1908. Large 12mo. 153 pages. \$2.50.

The general medical reader is apt to pass over the title of this book unnoticed: but *cosmetic surgery*—of which this volume treats—is fast becoming an established specialty for which there will be an increasing demand as the technic becomes more and more perfected. Dr. Kolle's book is an exceedingly valuable contribution to prothesis. He describes in detail the manner of making subcutaneous injections to correct deformities about the face, nose, etc. For the past few years, he uses the following mixed paraffine, which works satisfactorily with the cold process injections:

R Paraffine (plate sterile) 5ij
Vaseline alba (sterile) 5ij

The author reviews with candor the uses and disadvantages and the precautions to be adopted and gives a number of photographic illustrations showing appearances of patients before and after treatment. This surgical specialty dates its beginning only a few years back; and to whoever undertakes this specialty, this book will prove of great value.

Principles and Practice of Modern Otology. By JOHN F. BARNHILL, M. D., Professor of Otology, Laryngology, and Rhinology, Indiana University School of Medicine, etc., and ERNEST DE WOLFE WALES, B. S., M. D., Associate Professor of Otology, Indiana University School of Medicine, etc. With 305 Original Illustrations, Many in Colors. Philadelphia and London. W. B. Saunders Co., 1907. 8vo. 575 pages. Cloth \$5.50. half Morocco, \$7 net.

The preface states the chief objects of this book to be to modernize the subject of otology; to correct certain traditional beliefs—such as the absurdity of looking upon a discharging ear as trivial; to advocate the earliest possible prophylaxis or treatment, and to emphasize the importance of a thorough examination and a definite diagnosis. The chapter on anatomy of the ear, and the sections on pathology throughout have been prepared by Dr. Wales; the balance of the book by Dr. Barnhill. The arrangement of the work is thoroughly systematic, and covers all subjects usually included in a volume on otology. Among other attractive and useful points are the differential diagnostic tables of acute tubotympanic catarrh, acute catarrhal otitis media and acute suppurative otitis media, on page 277; of the uncomplicated intracranial diseases occurring as the result of aural suppuration—namely, meningitis, sinus thrombosis, and brain abscess, on pages 465 and 6; and diagnosis between middle ear and labyrinthine diseases, on pages 523 and 4. The book is full of practical suggestions as to treatment and very full as to operative technic. While of special interest to the otologist, many valuable suggestions are made from which the general practitioner may derive important lessons. The illustrations are all original. It is an excellent practical book on diseases of the ear and its adnexa.

To Panama and Back. The Record of an Experience. By HENRY T. BYFORD, M. D., W. B. Conkey Co., Chicago. 12mo. 384 pages.

Like most books of travel to points in which

all are interested at the time, this is a most readable one. The occasion of the trip was the Pan American Medical Congress which met at Panama January, 1905. The record given of the Congress does not show that much of medical interest engaged attention, for the time was taken up in sight-seeing, learning the habits and customs of the people, etc. The account written is mostly from diary notes, which gives the book a decidedly readable character from first to last. The author is a physician known to all American medical men, and naturally he has written chiefly about matters which would interest doctors, although his details of sight seeing—like much of the popular doctor's talk with friends and patients—make a more entertaining record, while facts are stated of constant interest to every American at this time. Numerous illustrations are given in the book. We are sorry that the price of the book is not published.

Editorial.

Medical Society of Virginia.

Under the untiring efforts of the President, Dr. Wm. F. Drewry of Petersburg, the session to be held at the Hotel Jefferson, Richmond, October 20-23, promises to be the largest and best ever held. Before our next issue, the official postal card request for titles of papers to be presented during this session, will be issued—about August 20. Responses to this postal should be prompt, as the Official Program has to be prepared and be ready for issue "five weeks in advance of the session," or about September 16th. Papers, the titles of which are not received in time for publication in this Official Program are, under the law, relegated to the last of the session, which practically means that they will not be read at all—for want of time. The total registered attendance from present indications, will scarcely be less than 500 doctors. Among them will be some of the most distinguished non-resident Honorary Members of the Society—many of whom will contribute papers, and participate in discussions, etc.

Under the new Constitution and By-Laws, the number of non-residents invited to be present and present papers is limited to three, and the President of the Society only has author-

ity to confer such invitations. Under this law, Surgeon General U. S. Navy, Dr. Presley M. Rixey, of Washington, D. C., Lewis C. Morris, of Birmingham, Ala., and Fred. Peterson of New York City, have accepted invitations and promised papers.

The session will begin Tuesday night at 8 o'clock, and the time till adjournment will be taken up with the President's address, the election of new members, the election of five new members to serve from the State at large on the Executive Council, the presentation of official reports, etc., the introduction of resolutions or motions, to be referred to the Executive Council for action, etc.

It is important for those who owe the Society annual dues to promptly remit the amount to the Treasurer, Dr. R. M. Slaughter, Theological Seminary, Va. Heretofore, the law has allowed members to be in arrears up to the fourth year (\$8) before being reported and dropped from the Register as "delinquents." Such parties, until October 20th, will come under the old law. But the new law, which goes into effect October 20th, requires that all parties who owe three years' dues (\$6) shall be reported, and their names published in the *Transactions* as dropped from membership because "delinquent"; and no member, surely, wants such a published record against himself. Hence, members should pay up *promptly* what they owe.

Since hereafter, the Society must meet only in the larger cities of the State, on account of hotel accommodations, etc., the profession of Richmond has practically decided not to have a banquet. The danger is that the frequent recurrent expense of such a measure might cause loss of interest in the meetings of the Society in any one city. Hence Richmond will comply with the request made at Chase City session, that banquets by the local profession of the place in which the Society may meet hereafter be not given. However, Dr. Stuart McGuire has requested that the Committee of Arrangements will set aside one night for a reception to be given by him. The general attractions of this city, it is expected, will provide ample opportunity for the enjoyment of the members for another night.

It is expected that the Virginia and the Memorial hospitals, of this city, will afford am-

ple opportunities for clinics at hours which will not conflict with the hours of meetings of the Society.

In our successive issues until the session we expect to have something to say concerning the interests of the Society. In our next issue, we will give a full list of the ten District Members of the Executive Council, as the Tenth District will not have nominated its Councillor until after this number has gone to press.

The Journal of the American Medical Association.

Is undoubtedly one of the best scientific medical journals of the world. With its immense financial resources, there is scarcely anything purchasable in a journalistic way that it cannot buy. While it is the property of the American Medical Association, it makes no discrimination in subscription charge to members and non-members. Those in charge of its affairs compile every few years a very excellent medical directory of the profession of the United States, which, also, is sold to members and non-members alike, for the same price. The same may be said of other publications which issue from its presses. It has provided itself with fine buildings, and the most approved of equipments, machinery, etc., and has opportunities for good rarely possessed. Its executive officers are paid competently, and it has lecturers, correspondents, and agents in the field who, of course, are satisfactorily paid for the work they do. The whole thing is worked as if by machinery—a wheel within a wheel. Naturally this corporation has a wide influence in favor of anything it may advocate.

What is to become of its accumulations in a few years, no one can foretell. It would seem impolitic for it to enter into competition with other legitimate business, such as the "directory" matter, although it would be entirely right and proper for it to publish from time to time a post-office register of members of the Association, with such facts concerning the members as might be deemed prudent—such as college and date of graduation, when they joined the Association, etc. It does not seem imprudent to us that the fact may be stated also whether or not the party is limiting himself to a special line of practice, etc. Such a volume ought to

be given free of charge to members who keep their dues paid up, just as State societies do. A member has a right to know who are his fellow-members, without extra-charge.

With such financial accumulations as this Association has, it would seem natural that encouragement would be given to original research and investigations in a great many channels, where undeveloped truths must yet be hidden. If proper rewards were offered or competent salaries given, and laboratories established, etc., for the proper investigation of many now occult matters—physiological, clinical or practical—great good to humanity might be accomplished. If Reed alone discovered the cause of yellow fever, and Gorgas has been enabled to carry into practical effect the results of such study—especially in the Ithmian region—is it not natural to suppose that a concentration of effort to discover the causes of malaria, typhoid fever, and many such infections, *and to eradicate them* from the list of diseases, might be secured? We are not speaking of prize essays of \$100 or \$500, etc., but of appropriations sufficient to let selected workers devote their entire attention and energy to such investigations, which the private practitioner cannot afford to attempt. Subscriptions were made in the outside world sufficient to enable Peary and party again to start in exploration of the Arctic regions—simply for the sake of science—a science that may be pleasing for some to study, but which can scarcely be expected to result in material good to mankind. But in the American Medical Association, we have an organization fully able financially, and with a membership, out of which properly competent investigators may be chosen for original research work, or investigations, as have been suggested. Such work now falls to the expense of the individual members of the Association, few of whom can stand the pressure.

Instead of doing such things, the business policy of the Association and its *Journal* has been devoted for some years to exposing the composition of some proprietary medicines, etc. Thus far, the acts of the Council of Pharmacy and Chemistry have had the general endorsement of the profession, for doctors properly wish to know the components of the medicines they prescribe. We cannot understand why

manufacturers of such things are unwilling to properly label packages as to the components of their preparations. Such a course we deem short-sighted policy. Sharp & Dohme, for instance, lose none of their influence with the profession by properly labelling the composition of their "Lapactic Pills," which are being constantly prescribed under that proprietary name. When *The Journal* or its Council of Pharmacy and Chemistry undertakes to go further than publish the results of analyses of the preparations, it is overstepping its rights. If frauds are exposed, the profession at large has good enough judgment to act accordingly. Why should investigators confine themselves entirely to pharmaceutical preparations, when some surgical or instrument houses are guilty of supplying such things as knives, needles, suture materials, etc., of evidently the lowest degree of quality?

As might have been anticipated, with the tendencies manifest by this great corporation, under its present management, it is getting itself into trouble. It is not the true part of greatness in wealth and official position to attempt to oppress the honest struggler for existence. Such wrongs, like the acts of political parties, sooner or later have a reactionary effect.

The attacks which have been piled up in *The Journal* against the Abbott Alkaloidal Co., for instance, have given that firm strong cause to defend itself in the form of a recently issued pamphlet entitled "An Appeal for a Square Deal." It accuses Dr. Simmons, the official head of *The Journal*, and Secretary of the American Medical Association, of direct "falsehood," and such charge, if true, is not tolerable by members of the Association, of which Dr. Simmons is practically the executive officer. This pamphlet speaks of him as "a graduate of a homeopathic school," and adds: "The animosity of the renegade against his former associates is traditional." In short, this "Appeal for a Square Deal" presents the editor of *THE American Medical Association Journal*, and others related to him in his official position in a most unenviable light. We await with interest a reply from Dr. Simmons; for as the matter now stands, Dr. Abbott, who himself is a member in good standing of the American Medical Association, and of his State and local

medical societies, has the whip handle. True, Dr. Simmons has the machinery of the American Medical Association to help him out of the hole in which he has placed the Association.

We presume that the Board of Trustees of the Association will promptly investigate the matter in a fair and open manner. If the Board declines to do this, it should retire and let others act for the honor of the profession. Certainly, if the charges which seem well founded by statements of Dr. Abbott, are true, then Dr. Simmons and others should resign their positions of trust, and others of a more conservative temperament—not bull-dozers—should be placed in charge. As the author of this "appeal" is a member of the Association, and entitled to a hearing, and as the pamphlet has no doubt been sent broadcast, it will have its effect upon so many of the Association as to leave at least suspicion of wrong-doing. Denied the use of *The Journal* for the vindication of himself and firm, Dr. Abbott has been compelled to resort to the present method. It is no longer a personal matter, but one that concerns all members of the Association, for a "square deal" is undoubtedly their wish.

While some may take a different view of this matter, it seems to us that self-respect and a proper regard for the affairs of the Association and *The Journal* demand some such course as we have suggested. We cannot envy those who hold positions as members of the House of Delegates when they come to the consideration of this affair, for we recognize the disposition of human nature simply to white-wash besmeared walls. But who can tell what next is to follow, and into what complications legal or otherwise, the Association itself may become involved if such a reckless course is further to be pursued in attempting to ride rough shod over others?

The Southern Medical Publishing Co., Baltimore.

We are glad to learn from Mr. J. C. Albrecht, the head of this firm, that it will publish in book form the *Lectures on Principles of Surgery*, by Dr. Stuart McGuire, of this city, and that the book will be on sale next month. These lectures have been appearing in the *Virginia Medical Semi-Monthly* for the past two years, and the author has taken advantage of

his opportunity to revise and, in some instances, re-write them for the book. As about to be presented, arranged as they will be, in logical order, they will make a valuable addition to surgical literature—valuable alike to the practitioner and as a college text-book.

It is time Southern medical authorities were taking a more prominent place, and we hope the example set by Dr. McGuire will be followed by others of our leading men of this section. We have laboratory, hospital and clinical opportunities in our Southern medical centers, and our men have the ability. Is it that they lack the push and industry that characterize doctors elsewhere, who are no better entitled to the rank of authors?

The Virginia State Board of Health,

Which became effective July 1, in a thoroughly re-organized form with an annual appropriation of \$40,000 for its maintenance, has issued its July (the first) *Bulletin*. It relates chiefly to tuberculosis and typhoid fever—their causes, means of prevention, etc. It advocates proper sanitorial provision for the estimated 20,000 tubercular cases in this State. Bacterial examinations, etc., of sputum, suspected infectious materials, etc. will be made by this Board, free of cost to doctor, patient or community. The central office in Richmond will constantly add to its equipments for investigations of preventable infectious diseases especially. Dr. Ennion G. Williams, State Health Commissioner, is an able, energetic worker, and under his administration, we have reason to hope for improved health conditions in Virginia. We trust that the profession of the State will give Dr. Williams and the Board its whole-souled help.

The Old Dominion Journal of Medicine and Surgery

Made its appearance in July under a new cover, editorial management, etc. Price \$2 a year. It has an editorial corps of five editors, connected with the Medical College of Virginia. Of the five original articles in this issue, four are by editors of the *Journal*, and they are good. It declares itself as not accepting advertisements of proprietary medicines not approved by the Council of Pharmacy and

Chemistry of the A. M. A. Among other local advertisements, it has five pages concerning the Memorial Hospital, its builders and the Medical College of Virginia. In sending subscriptions, address Dr. McCaw Tompkins, Richmond, Va. Dr. Greer Baughman was former editor, etc.

The South Piedmont Medical Society

Met at Lynchburg, Va., July 21, 1908, with an attendance which, while only fair, was profitable and enthusiastic. The physicians of Lynchburg entertained royally with a banquet at the Masonic Hall after the meeting adjourned. The following officers were elected for the ensuing term: Dr. H. B. Melvin of Houston, president; vice-presidents, Drs. G. W. Cocke, Danville; W. L. Williams, Brookneal; J. A. Owen, South Boston; C. W. Tucker, Jr., Drake's Branch; secretary, Dr. G. A. Stover, South Boston; treasurer, Dr. J. L. Kent, Lynchburg. The next meeting will be held in Danville, Va. the third Tuesday in November.

The Shenandoah Valley Medical Society

Held its second regular meeting in the parlor of the Geary Hotel, Woodstock, Va. July 13, 1908, with an attendance of twenty-one physicians. On account of the absence of three authors, the program was not as full as had been planned, but several interesting papers were read by members of the society and their guests. Twenty-nine eligible physicians reside in Shenandoah County, all of which are members of the county Society, and nineteen were present at this meeting.

The next meeting will be held in New Market, Va., in December. Dr. W. F. Driver, of New Market, is secretary.

Dr. George J. Tompkins, Lynchburg, Va.,

Was elected Councillor to the Medical Society of Virginia at a meeting of physicians of the Sixth Congressional District held at Lynchburg, Va., July 21, 1908.

The brown-coated tongue indicates an alkaline state of the blood. Dilute sulphuric acid will be an appropriate remedy, and the tongue will soon become clean under its use.—*Exchange*.

THE Virginia Medical Semi-Monthly.

(FORMERLY VIRGINIA MEDICAL MONTHLY.)

Vol. 13, No. 10.
Whole No. 298.

RICHMOND, VA., AUGUST 21, 1908.

\$2 00 a Year.
10 Cents a Copy.

Original Communications.

THE SUTURE OF BLOOD VESSELS AND DIRECT TRANSFUSION OF BLOOD BY VASCULAR ANASTOMOSES.*

By STEPHEN H. WATTS, M. D., Charlottesville, Va.
Professor of Surgery and Gynecology, University of Virginia;
Surgeon-in-Chief to the University of Virginia Hospital.

The lateral suture of veins was carried out for the first time successfully by Schede in 1882. This method was later resorted to in numerous cases, and has now come into such general use that most surgeons of experience have had occasion to employ it.

To Jassinowsky, who published the results of his experiments in 1899 in his Inaugural Dissertation, belongs the credit of having proven conclusively that arterial wounds can be sutured with preservation of the lumen of the vessel. Of twenty-six cases in which he sutured longitudinal and partial transverse wounds of arteries of animals, all were successful except four. As suture materials he used fine curved needles and fine silk, the sutures including only the media and adventitia, and avoiding the intima. As the result of his experiments Jassinowsky reached the following conclusions: (1) The arterial wound heals by first intention; (2) bleeding after operation can be surely and completely avoided; (3) secondary hemorrhage and thrombosis are not to be feared; (4) suture should be done in all recent, clean, longitudinal and oblique wounds of large vessels, and in transverse wounds not exceeding one-half the circumference of the vessel; (5) the strictest asepsis is necessary; (6) the suture is easily done.

Jassinowsky's results have been confirmed by Burci, Murphy, Dorfer and others. Numerous instances of successful suture of accidental wounds in the arteries of man have demon-

strated the practical value of this procedure. In 1902 Schmitz was able to collect twenty-one cases of lateral suture of arteries in man.

A good deal of experimental work has been done on the circular suture of blood vessels. As the result of these experiments various methods have been recommended for uniting divided vessels. In general, these may be divided into two classes: (1) Those in which the simple suture is used; (2) those where mechanical aids are employed. Among those who have advocated the simple suture are Briau and Jaboulay, Murphy, Carrel, Jensen, and others. Some have used simple interrupted sutures and mattress sutures; others the continuous suture. Some include all the coats of the vessel in the suture; others avoid penetrating the intima. Carrel, who has obtained more brilliant results with blood-vessel suture than any other experimenter, in his original article advised the avoidance of the intima. In 1897, Murphy, after numerous experiments on animals, recommended uniting completely divided vessels by invaginating one end a short distance into the other, and fixing them thus with sutures. On account of the additional support thus obtained he thought the method particularly applicable to arteries. In the majority of cases of suture of divided arteries in man this method has been used.

The mechanical aids may be divided into the extra-vascular and endo-vascular. Among the former may be mentioned various clamps, decalcified bone and ivory rings, sheaths made of sections of other arteries or veins, aluminum rings, magnesium rings, or prostheses of Payr, by means of which the ends of the vessel are so invaginated that intima is approximated to intima. Payr and Hopfner claim to have obtained good results with this method. The endo-vascular aids are of no importance clinically; the glass cylinder method of Abbe is, however, of historical interest.

*Read before the South Piedmont Medical Society
Lynchburg, Va., July 21, 1908.

Arterio-venous anastomoses have been done by San Martin, Carrel, Jaboulay and others. The interesting results obtained by Carrel are doubtless familiar to you.

AUTHOR'S EXPERIMENTS.

My experiments began with attempts to transplant the thyroid gland, making use of vascular anastomoses by Carrel's method. The attempts proved unsuccessful; so it was decided to apply this method to a series of arterial, venous, and arterio-venous sutures, with a view to determining in what percentage of cases we may expect a successful result.

The experiments were done on dogs of various sizes. When they could be obtained, large animals were used, but often it was necessary to make use of very small ones. The anesthetic was ether, usually administered after a previous injection of one grain of morphine. The following technic was employed: After shaving a large area, the skin was cleaned with soap and water, permanganate of potash, oxalic acid and bichloride of mercury. The field of operation was then isolated with sterile towels and, after making the skin incision, sterile towels were clamped to the edges of the incision. The vessels were exposed, well freed and provisional hemostasis produced by small spring clamps whose blades were armed with rubber. The vessels were then divided and prepared for suture by carefully removing the loose connective-tissue sheath about the ends of the vessel. This can be done very nicely by grasping the sheath with forceps, drawing it over the end of the vessel and clipping it off with scissors. The greatest care was exercised in handling the vessels, in order that they be injured as little as possible, and especial care was taken not to apply metallic forceps to the intima. Very fine (No. 16) straight needles and fine China bead silk were the suture materials employed, the thread being greased with or boiled in vaseline as suggested by Carrel. During the operation the drying of the vessels was prevented by the application of normal salt solution or sterile vaseline.

The vessel sutures were done according to Carrel's method. The vessel ends were first united by three interrupted sutures equidistant from each other on the circumference of the vessel—the sutures penetrating all the coats

of the vessel. By traction upon these sutures the edges of the vessels were nicely approximated, and a continuous suture easily applied. It is convenient to leave the needles attached to the long ends of the primary sutures, and to use these ends for the continuous suture. On turning on the current there was seldom any leakage, and when it did occur a slight compression usually caused it to cease in a few minutes. The tissues over the vessel were approximated with fine silk sutures, and the skin was closed with a subcuticular suture of the same material. The wounds were dressed with silver foil, and when the operation was on the neck a crinoline bandage was applied. When the wound was in the groin, it was usually dressed with collodion; sometimes a crinoline bandage was applied, which was usually torn off by the animal within twenty-four hours.

Results. The common carotid artery was sutured thirteen times. All of the sutures were perfectly successful, and in no case was there the slightest evidence of thrombus formation. The femoral artery was sutured twice, thrombosis occurring both times as a result of wound infection. The external jugular vein was also sutured thirteen times, ten of the sutures being successful.

Microscopic examination of the arterial sutures at periods varying from twenty-eight to eighty-two days after the operation shows that there is a gradual restoration of the artery at the site of suture, and that with the exception of the inner elastic membrane, all the elements of the vessel wall are probably regenerated. The sections of the thin-walled veins which were obtained were so distorted by the presence of the silk sutures that they were of little value for microscopic study.

The common carotid artery was sutured to the external jugular vein four times, all being successful. After the suture, the veins became distended and pulsated vigorously; a marked thrill could be felt in the veins and a loud murmur heard over them. Examination of the veins one to three months after the operation showed a marked dilatation of these vessels, a thickening of their walls, and in some there were interesting plaques in the intima, suggesting the changes seen in arterio-sclerosis. Microscopic examination of the walls of the veins revealed changes very analogous to those

found in the walls of arterio-sclerotic arteries. In the veins of experiment 13, the following condition was found: While all the coats of the vessel were greatly thickened, the thickening of the intima, especially in the regions corresponding to the white plaques seen in the gross specimen, was very marked. The endothelial cells lining the intima were short and thick. The intima was composed of fibrous tissue fairly rich in cells. In certain places this tissue contained fewer nuclei and stained more poorly, but no atheroma was present. The thickening of the media was due to an increase in the interstitial connective tissue as well as to an increase in the size and number of its muscle cells. Where the intima was thicker the muscle cells seemed to be fewer, and were separated by a considerable amount of connective tissue. The thickening of the adventitia was also well marked. There seemed to be a considerable increase in the elastic fibers of the intima, especially in the deeper portions near the inner elastic membrane, where a network of fine fibers was seen. In general, the elastic fibers seemed somewhat less abundant in the thicker plaques, but at their edges, and in their deeper layers numerous fine elastic fibers were seen, apparently invading them. The elastic fibers of the media and adventitia were diminished, but the diminution was more marked in the former.

The central end of the divided femoral artery was sutured to the distal end of the divided femoral vein four times. One case was successful; in the others thrombosis occurred. In the successful case the leg became very much swollen after the operation, and in two days was twice as large as the opposite one. The swelling gradually subsided but never entirely disappeared. The femoral vein became much dilated, and marked pulsation could be felt in the saphenous vein near the foot. Examination three months after the operation showed a marked dilatation and thickening of the wall of the vein. The distal portion of the femoral artery was small, atrophic, and did not seem to be performing the functions of a vein.

In four animals a lateral anastomosis of the femoral artery and vein was made. In all the cases the immediate result was quite satisfactory. On turning on the blood stream there

was no leakage, the vein became considerably distended, a thrill could be felt in it near the point of anastomosis, and a humming-top murmur could be heard at some distance from the animal. The red arterial stream could be seen through the thin-walled vein, rushing into the vein, and for the most part, returning immediately to the heart. In only one of the animals, however, did the anastomosis remain patent, a marked thrill and loud murmur being present five weeks after the operation when the animal escaped from the paddock and was lost. In the second animal the murmur and thrill persisted for four weeks and then disappeared—examination a few weeks later showing that the anastomotic opening had healed, but that the vessel had remained patent. In the third animal, whose wound became infected, the thrill and murmur lasted only four days; examination two months later showed a thrombosis of the artery, the vein remaining unobstructed. In the fourth case the thrill and murmur persisted five or six days, death occurring on the eighth day after operation from secondary hemorrhage.

Excision and replantation of a section of the femoral artery was done once, but thrombosis occurred. Transplantation of a section of vein into an artery was tried twice. In one instance a section of the external jugular vein was transplanted into the common carotid artery with perfect success. Examination of the specimen twenty-six days after the operation showed considerable dilatation and thickening of the transplanted vein and the microscopic study of the vein revealed a condition very similar to that described above, resulting from the end to end anastomosis of the carotid artery and jugular vein. In the other case, a section of the external jugular vein was transplanted into the femoral artery, but thrombosis resulted in a few days.

Transplantation of the thyroid gland was done six times, but none of these were successful. The failure of these experiments may be attributed to the small size of the inferior thyroid vein, whose diameter rarely exceeded two or three millimeters, and to the fact that the transplantations were undertaken before we had made any experiments with simple vascular sutures.

In reviewing our experiments we find that

of thirty-one experiments upon the vessels of the neck, twenty-eight were successful, whereas of twelve experiments upon the femoral vessels only two were entirely successful. This discrepancy is not difficult to explain. Wounds in the neck are inaccessible to the dog's teeth, and can be readily bandaged, the wounds being thus kept clean, and dead space obliterated. In the groin, however, it is very difficult to apply a bandage which will remain in place, obliterating the large space which is so apt to be present, and preventing movements of the leg which interfere materially with a successful vessel suture.

The results show conclusively that completely divided vessels can be sutured with almost uniform success, when the aseptic technic is good. The intima can be included in the suture with impunity, the application of the suture being thus greatly facilitated. Nearly all experimenters with the suture of blood vessels have called attention to the need of a very perfect technic. I wish also to emphasize this point, for I consider infection by far the most important factor in producing thrombosis after vascular sutures. I think, as Carrel does, that there may be minor grades of infection, which, although allowing per primam healing of the wound, may be sufficient to produce thrombosis of the sutured vessels.

The application of arterio-venous anastomoses to the direct transfusion of blood. Arterio-venous anastomoses have been employed by Crile and Dolley in the direct transfusion of blood in animals. From a large series of experiments they have drawn the following conclusions:

"Arteries and veins of varying sizes may be readily anastomosed by Carrel's method so as to be impervious to blood and free from clotting; the transference of blood from one animal to another is definitely accomplished by anastomosing the proximal end of an artery of the donor into the proximal end of the vein of the donee: convenience may be the only consideration in the selection of the vessel to be anastomosed; the blood of one animal may be readily transfused to another; the blood of one dog is isotonic with that of another dog; if a dog be bled to the last drop of blood that will flow, then an equal amount of blood be transfused from another, the transfused blood

suffers no impairment by the blood or tissue of its new host, and, in turn, it causes no impairment; no hæmolysis is produced; and, finally, the transfused blood becomes a perfect substitute for the lost blood, and the factor of hæmorrhage may be eliminated."

Crile, who has applied the same method to various clinical cases, has obtained some brilliant results, especially with cases of hemorrhage.

Since this publication of Crile, Hektoen, of Chicago, has pointed out the presence of iso-agglutinins in human blood, and the fact that the serum of certain individuals agglutinates the red corpuscles of certain others; and Pepper and Nisbet have reported a case of fatal hæmolysis, following the direct transfusion of blood in a case of severe secondary anemia of unknown origin. Therefore, although the cases of Crile and others indicate the probable safety of the operation, the above facts indicate the danger in certain conditions, and the necessity of caution until we are in possession of greater knowledge.

I have thus transfused blood twelve times, and have experienced no evil results.

The first five cases were done by uniting the radial artery of the donor to the median basilic vein of the donee by means of Carrel's method of suture. These were not so satisfactory as the last seven in which Crile's transfusion canulas were used. These are so applied that the end of the artery is everted over the small tube, and then the vein is drawn over the everted end of the artery and fastened thus with a ligature. In this manner intima is applied to intima, and there is no foreign body in the lumen of the vessels.

The condition of the donor is, of course, carefully observed during the operation, blood pressure observations being taken at frequent intervals. It is very important not to discuss the condition of the donor in his hearing, since the fear, thus induced, may cause such a fall in his blood pressure, that the operation may have to be discontinued.

The changes wrought in the donee during the transfusion are often startling. The anemic, apathetic patient becomes flushed and jocose, thus indicating his improved condition.

In some cases I have, at one sitting, by the transfusion of 700 to 1,000 c. c. of blood raised

the hemaglobia of the donee from forty to seventy per cent., and the red cells from 2,000,000 to 3,500,000 per cubic millimetre.

I will now mention quite briefly some of the cases in which I have employed this procedure.

The first case was one of post-operative hemorrhage in a jaundiced patient. The anastomosis was satisfactory, and it was estimated that the donee had received about 700 c. c. of blood. Her condition was considerably improved, but the improvement was of short duration. The hemorrhage continued, and she died five hours after the transfusion was completed.

I have employed transfusion in two cases of extensive burns. It was hoped that the blood pressure of the donee would be so increased by the transfusion that they could be bled from the opposite arm, and the toxemia, produced by the burn, thus combatted. In neither case did the pressure become such as to warrant bleeding. One case died and the other recovered.

A case of hemorrhagic dysentery of undetermined origin was transfused twice, with an interval of several months, and each time his condition was wonderfully improved. After each transfusion he said he "felt like another person," and well he might, for he had a great deal of another person circulating in his vessels.

An interesting case was one of pernicious anemia, who had only 848,000 red blood cells to the cubic millimetre, and whose hæmoglobin was reduced to twenty-two per cent. The transfusion was done in order to study the changes in the blood picture, and to see how long the improved condition would last. The donor was a man with polycythemia, whose red blood count was 8,712,000, and whose hæmoglobin was 123 per cent. In this case in order to avoid the contraction of the radial artery, if possible, it was not dissected out cleanly, as in previous cases, but its venæ comites were left attached to it, except at the point where it was divided. In spite of this precaution, however, a good deal of contraction did occur. The artery of the donor was sutured to the proximal end of the median basilic vein of the donee, as in the other cases. The suture was very satisfactory; no hemorrhage occurred when the clamp was removed from the artery, the vein became distended and pulsated actively. After

eighty minutes the vein was divided and the blood was found to be flowing at the rate of 16 c. c. to the minute. It was thus estimated that the donee had received 1,280 c. c. of blood. At the end of the transfusion there was a perceptible flush to his face, conjunctivæ and finger-nails, but there was no marked change in his subjective sensations. A blood count, made at this time, showed that the number of red cells had risen to 1,880,000 and the hæmoglobin to thirty-eight per cent. The donor was not much affected by the bleeding; his blood pressure fell from 150 to 110, his red count to 6,912,000 and his hæmoglobin to 107 per cent.

The improved condition of the donee was of short duration. The daily blood examination showed a rapid diminuation in the number of red cells and amount of hæmoglobin; and in three days they were less than before the transfusion.

Another interesting case was a man with symptoms and signs suggesting a carcinoma of the stomach, who had a severe grade of anemia; in fact, this anemia caused the exploratory operation to be postponed for some time. He was finally transfused, his hæmoglobin raised from forty to sixty-five per cent., and his red cells from 2,000,000 to 3,000,000. He was explored the following day, and an inoperable carcinoma of the stomach found. The wound bled well and the blood was of a good color. He recovered rapidly from the operation, and was able to leave the hospital in eight days.

Of the other cases, I will mention only one, namely a patient with general peritonitis of appendical origin, who developed a post-operative obstruction, and whose condition became quite bad. A short while after the blood stream was turned on he became quite cyanotic, and complained of severe pain in the epigastrium. The current was shut off and the symptoms disappeared. In a few minutes the transfusion was resumed; the symptoms reappeared, and were rather alarming. The transfusion was then permanently discontinued, and the symptoms again disappeared. These symptoms were thought to be perhaps due to an overloading of the right side of the heart. The patient made a good recovery, and it is interesting to note, that the intestinal peristalsis was appar-

ently considerably stimulated by the transfusion.

In conclusion, I would say that I believe in the future the direct transfusion of blood will become an important aid in the treatment of certain conditions, such as post-operative hemorrhage, but in the present state of our knowledge should be employed with caution. Perhaps by laboratory methods we will be able to determine which bloods are, and which are not compatible with each other.

AN OPINION AS TO THE ULTIMATE RESULTS OBTAINED FROM SURGICAL, IN COMPARISON WITH MEDICAL TREATMENT IN CERTAIN OVARIAN DISEASES AND IN ALL OVARIAN NEUROSIS.*

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The best method for the treatment of ovarian diseases and neuroses is, and always has been, a problem for the profession.

I am, in no sense, an opponent of discriminating and skilled surgery in these cases, nor do I decry the brilliant results often obtained; but an experience of a number of years in the treatment of this class of patients, coming to me in the various stages of the acute and chronic manifestations, and coming also from the hands of many of the most brilliant operators in this country, have convinced me that Surgery has been over-rated in their cure, and that, unless there is a marked pathological condition of degeneration or destruction, this line of treatment has been largely unavailing, and that medical lines of treatment, when proper discrimination has been used and careful regimen carried out, produce the best results.

To speak plainly, I believe that specialism has run mad, and the further fact that therapeutic nihilism prevails in the minds of many physicians and surgeons has often been the precipitate cause of surgical intervention in many of these cases, which should have the benefit, certainly of more careful, more systematic and more enthusiastic medical treatment before being submitted to surgery as a *dernier-resort*.

It is my opinion that, for a proper diagno-

sis and consequent successful treatment, this class of cases requires more knowledge of the fundamental principles of the basic elements of medical and surgical science than almost any other, and that success cannot even be hoped for, unless each case is considered wholly in relation to its special and individual characteristics.

It is a mistake likewise, to enter upon their treatment, believing that nothing will avail short of surgery, which often is the despair of curative medicine.

Medical men have usually been more dilatory, or at least more modest than the surgeons in advancing their views and advocating their claims, and the result has been obvious. It is also a fact that the surgical method of treatment frequently appears to be an excuse for lack of interest, industry and discriminating intelligence on the part of the physician, and that it often appeals to us as an easy method of getting ourselves out of a perplexing situation.

Most medical men are not fully rounded physicians and surgeons, and it is equally true that most surgeons are not fully equipped in the whole realm of medicine; consequently, errors of judgment in treatment, are as easy as errors in diagnosis.

Oftentimes surgeons are not fitted by practice to study the medical side of a case, or are too prone to ignore the medical points in evidence, just as the physician is often ignorant or unpracticed in the surgical features of such cases.

In other words, there is frequently a lack of skilled knowledge in diagnosis on both sides; and the prevalent idea in our profession, both medically and surgically speaking, that the correction or removal of some one abnormality will solve the difficulty is the basis of many of the undesirable results seen. I have not tabulated any series of cases for this paper, for while the list might be startling, it might not be conclusive nor convincing to many who have not personally examined them and made their own diagnosis. It is my belief that too little attention has been given to the scientific and clinical study of the individual cases by both physicians and surgeons, and that a grave mistake is frequently made in submitting the patient to the surgical procedure too early; for the fact is often and deplorably overlooked that the surgical operation, especially if unsuccessful

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ful, robs the poor patient of the last despairing hope of health.

The realization of this by many patients, particularly those of a neurotic temperament, removes all hope or effort, and induces a resultant train of nervous and mental symptoms, compared to which the former state of chronic invalidism, was but a trifle, especially if they are aware of the fact that there has been a radical removal of the sexual organs.

In brief, then, the successful treatment of these cases requires not only a complete and continuous medical and surgical study of the special symptoms, but also of the individual temperament of each patient, as well as a hopeful and enthusiastic spirit of management in a carefully planned and well-developed line of medical treatment—exhausting every means at hand for the alleviation of physical suffering before submitting the patient to the alternative of surgery, unless there be marked evidences of a pathological condition urgently requiring it.

I am aware that many of these patients fade away, carrying along with them the reputation of the physician and the silent evidences of his lack of discrimination; but still I believe that if the physician could impress his patient with the fact that, although they are able to be on their feet, they have symptoms of an illness which are just as definite and just as logical as would be the evident signs and symptoms of a pneumonia, for instance; and that though their symptoms are different from the usual signs and symptoms of sickness, still that if they would consent to be guided by the careful advice and treatment of their physicians, the ultimate results would be as beneficial and lasting as in the commoner forms of disease.

In my opinion, we, as physicians, are to blame for not impressing, and gravely impressing these patients with the seriousness of their condition, and not insisting upon the enforcement of our directions, and the necessity of the patient's full co-operation.

If the physician be lazy, or too little interested to properly manage the case, it would be better for himself and far better for the patient, that he should not in any manner attempt its treatment.

I believe, further, that with a proper appreciation of these facts by the physician and a considerate co-operation from the patient, we

could, in most of them, produce results that would be as brilliant as ever could be accomplished in occasional cases, by means of surgery.

Meddlesome pelvic interference by the physician in the treatment of these cases is no less to be countenanced than precipitate surgical intervention by the surgeon; for I believe that he is a wise man who, recognizing an inflamed ovary, will allow the uterus, no matter how greatly displaced it may be, to remain just as he happens to find it, and will address himself to the ovary alone. Relieve the patient first of her intolerable suffering and despondency, thus securing her sincere regard and co-operation, and there will be time enough left to rectify other matters.

I do not believe that the cause of the long and varying train of symptoms referable to ovarian disease is usually found within the uterus, however misplaced it may be, or in however great a degree its mucous membrane has degenerated; for it seems to me to have been frequently demonstrated that a retro-displacement and oophoritis are entirely distinct troubles—each characterized by peculiar phenomena, and each calling for separate treatment.

I have found, for example, pessaries to be only exceptionally beneficial, and more often that their indiscriminate use and not infrequent mal-adjustment, have been the exciting cause of serious disease.

I do believe, however, that in prolapse of the ovary, in hyperæmia or congestion so-called oophoritis, acute and chronic, as well as in neuralgias of the ovary, and all ovarian neuroses, great and lasting benefit has been obtained along medical and hygienic lines of treatment. Absolute rest, full feeding, proper eliminative measures, hot vaginal douchings, properly administered, and not in pints, but gallons, medicated tampons of iethyl-glycerin, painting the vaginal vault with iodine, repeated small fly-blisters to the iliac region, the use of the galvanic current of about 50 milliamperes, massage (unless blood or pus has accumulated in the Fallopian tubes, where, of course, this measure is contra-indicated, as there is danger of fluid being pressed into the peritoneal cavity), graduated gymnastics, etc., together with the administration of tonics, the very careful use of nervines, the chloride of gold, the daily use

of three to six tablets of the desiccated parotid gland substance of sheep, systematic hydrotherapeutic applications, etc., are all, in turn, and as required, potent agencies for palliation, as well as cure.

In conclusion, my experience has taught me—and this paper is intended not as a dogmatic presentation of the subject, but simply as a record of my personal experience—that both physicians and surgeons do not frequently appreciate the medical and psychic treatment and management of these cases; for in most instances, except with the qualifications stated above, the surgical treatment in the end produces no better results than the medical, and often robs the patient of the last hope. This result is wholly disappointing, and is only changing the clinical picture of the disease, substituting oftentimes for painful manifestations, those symptoms resulting from a morbid hopelessness for relief, the last state being worse than the former. Not a few times I have known one ovary to be removed, and the patient to return soon for the removal of the other because of fancied pain on both sides, thus proving the fallaciousness of the first diagnosis. And, moreover, emphasizing the fact that all tender and painful ovaries ought not to be subjected to surgical procedures too hastily.

In some few cases, however, nothing but an operation will cure the patient, and when, after careful treatment and discriminating study of the case, such a fact is recognized, it is nothing short of ignorance or prejudice to deny the patient the benefit of an operation for possible cure; but even then, the surgeon, in his work, should be guided by the rules of the strictest conservatism, and should not forget, as is so often done, that the cure is not completed when the uterus or ovary is replaced, or extirpated, but that to accomplish the best results, and to avoid, as well, the recurrence of habit-symptoms, medicinal agencies must be called into requisition.

Only in this way, then, by medical lines of treatment at first, fully and faithfully administered, afterwards by surgical methods, if the former have proved futile, and by both, if the latter has become necessary, can the end aimed at—complete restoration to health—be obtained.

To summarize, I believe that:

First. Too little time and skill are usually

expended by both physicians and surgeons in the proper diagnosis of these cases.

Second. The proper diagnosis requires a critical consideration, not only of the special features of each case and the particular pathological conditions present, but also of the individual temperament of the patient in question.

Third. The systemic condition of the patient must be the physician's first consideration, for the simple correction or removal of a single pelvic abnormality does not often effect a cure.

Fourth. Meddlesome pelvic interference, consequently, by both physicians and surgeons in the treatment of these cases is to be condemned.

Fifth. Certain ovarian diseases, as mentioned, and most ovarian neuroses do not usually require operative measures, better results being obtained by proper and continuous lines of medical treatment.

Sixth. Surgical measures are often undertaken hastily, and without sufficient constitutional preparation of the patient for the operation.

Seventh. Frequently these operations are too radical, and are performed before medical measures have been given a full and fair trial, and are graver than usually considered, for the resort to surgery robs the patient of the last hope of health, and, if successful, induces a train of symptoms more serious than the original condition.

Eighth. If a surgical operation is decided upon, the non-reference of the case back to the family physician for final cure is frequently a mistake, for, otherwise only an anatomical cure is effected, and not a physical and psychic one.

Ninth. To obtain the best and most permanent results, it is necessary that the family physician, who first sees these cases, should use all available means for their cure and for the prevention of threatening complications; and that if these do arise and surgical methods are indicated, there should be harmonious co-operation between the referring and attending consultants, both in the proposed treatment and subsequent management of them.

107 East Franklin Street.

For nervous exhaustion and melancholic mania Celerina may be given in teaspoonful doses three times a day.

A PLEA FOR A MORE LIBERAL EDUCATION FOR THE MEDICAL STUDENT.*

By FRANCIS E. HARRINGTON, B. S., M. D. Washington, D. C.

In making a plea for a more liberal education, I appreciate the magnitude of the task. Since the many points that one could find to aid the young physician, would require much time to elaborate, I shall only take up a few questions not usually considered in a medical course.

Modern therapeutics deals as much, if not more in preventive or prophylactic, as in curative medicine. Vaccination, diphtheritic and tetany anti-toxines, anti-streptococcus serum, are methods of precise therapeutics of to-day. The numerous "therapies" that have sprung up in recent times have broadened the field until it now includes all manner of things. I contend that medication is but a small branch of therapeutics, and too often indeed is the word limited to that single branch. We are taught that therapeutics is "the use or application or any means or remedy for the cure and prevention of disease." Under this head *hygienic, or sanitary medicine* must be included, and under this heading will I try to develop my subject.

The great strides the profession is making in stamping out disease, by preventing its spread, is the one great example of sanitary therapeutics. The transactions of the several medical congresses, meeting throughout the civilized world, further broaden the therapeutic field; their methods are therapeutics pure and simple, but they are general, international. Just so are the prescriptions of all physicians recognized the world over, even though their methods of treatment vary with the locality and local laws.

In America we educate students to be American physicians. True, some begin their practice far away from their Alma Mater, but in the majority of instances universities of medicine graduate the doctor for the locality.

The young graduate in medicine must present himself for examination before a State Board of Medical Examiners before he can obtain a license to practice his profession, and in the provisions of this examination he meets one of the greatest injustices a community can

inflict. Upon the one single branch of therapeutics (dealing with medication alone) is the line drawn between the regular course of four years' study and the quack of some hobby or "pathy." Leaving off this portion of a future practice, two years of study, anywhere and under any conditions, will suffice to place both men upon an equal footing before the law and in the eyes of the community. Has not the latter left off but a small branch of therapeutics to gain such a handicap over the other? Yet is he not practicing medicine in all its other forms?

The health laws of the State or locality in which the young physician begins his professional career, differ in different States, but in the main, they are very similar. Has not the medical profession of this country a national society? Why should not the public health laws of this country be unified and promulgated to the embryo physician, by his professors, who are themselves members of this universal association? This is within the power of the American physicians.

The young graduate is turned out ready to cope with disease in all its forms, but never a word of warning does he hear relative to the restrictions placed upon him by the lawmakers. The national pharmacy and drug acts and the quarantine regulations in regard to communicable diseases, have their influence upon the practicing physician. Boards of examiners require a great deal of the regular physician, from an educational standpoint, but never for a moment do they require any familiarity with the laws or regulations relative to the practice of medicine, or the restrictions placed thereon. This oversight eliminates one of the great necessities to intelligent practice, and in part, defeats the aim of the board. A diploma from a recognized university should be *prima facie* evidence of the applicant's qualifications as to general educational ability; and the examining board's requirements should compare more nearly with the bar examination in law, *i. e.*, local requirements.

With his license the physician is handed numerous blanks for reporting births, deaths, and contagious diseases, as required by law; but the provisions of this law are unknown to him. Few young men are fortunate enough to be able to add a hospital course to their train-

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ing; therefore, the routine of hospital care is unknown to him. The ways and means of employing nurses in the home; or of sick room management, of conducting a consultation, and the thousand and one points that add to the comfort of the patient and satisfaction of the family, are things to be learned by hard knocks, often to the discomfiture of the doctor and household, the neglect of the patient, as well as harsh criticisms of the profession of which he is a representative. Such a condition of affairs is entirely the fault of the profession at large.

Diversity of opinion is a trait of human nature. The individuality of practice defeats the aim of uniformity. The laws of Congress or State legislature with the resulting regulations relative to public health are necessary outgrowths of this lack of unity. A familiarity with these requirements is necessary for public protection. The reporting of contagious diseases to a department of the State, county, or city government is, in part, an outgrowth of civilization, and a means of aiding the medical fraternity in its prophylactic therapeutics. Statistics thus gathered, are valuable, and the legal force given the physician's instructions in the care of his patient, as well as the protection afforded the community, do much in advancing preventive medicine. Without these laws a physician's orders are simple requests; a patient is not bound to obey, and a refusal to comply with the necessary quarantine in contagious cases would mean widespread disease.

The majority of these laws are framed by the medical fraternity, and the execution of their provision is in the hands of the practising physician. Intelligent action must be displayed in carrying into execution these acts. In all such instances the public turn to their family physician for advice. What answer can the young man give them? How many cases of communicable diseases can be traced directly to previous cases poorly handled! Uniformity of law and action is necessary, and such uniformity can only be obtained by instructing the young physician in his duties to the community. Now, I maintain, that the knowledge of public health laws is quite as necessary to the graduate in medicine as is any other branch of his education, and I propose that the student in medicine be instructed in these laws

and regulations in his senior year. Each measure is a therapeutic agent in the hands of the doctor, and we can no more separate them from that branch of medicine than we can eliminate the doses of drugs in materia medica. Our physicians of the present day are splendidly educated in all the major branches of the art, but they lack one great essential, *i. e.*, application. The little details that go to make up the successful doctor are lost sight of in the magnitude of the greater subjects of the science of medicine.

Who is to blame for this condition of affairs, if not the medical schools of the country? The educational institutions in medicine are the ones to correct this error. The Association of Medical Colleges should take the matter in hand, and add to the course in medicine, a branch we might call "Applied Therapeutics." Let this course deal with the common sense side of the profession.

Our young men should be taught: first, something about the great brotherhood they are about to enter, and something of the laws of ethics. Instruct them in the holding of consultations; of the employment of nurses; of the relations between physician and druggist. Let the course embrace a full knowledge of the liberties and restrictions contained in the regulations of the departments of health; of quarantine and disinfection; of house-placarding, and the meaning thereof. How often do the profession and the authorities clash on simple points of medical law due to ignorance on the part of the physician.

The medical fraternity of this country needs to be more closely united. Mutual protection and more careful instruction of the student are crying demands of to-day. Every young man graduated in medicine will agree with me that he is poorly fitted to begin practice until the points I have spoken of are made clear to him. It is the duty of the profession to protect its ranks from invasion by the poorly educated, and to insist upon proper qualifications in those who are answering the call of an ever increasing demand.

Let our State Boards demand a knowledge of health laws, and the colleges will soon fall into line. In making a diagnosis and writing a prescription, the attending physician has only begun his part. He should know how to pre-

pare certain articles of diet; how to make a mustard plaster; how to give a sponge bath, etc. Why, then is it not just as necessary for him to know the regulations that affect his patient's freedom and the freedom of the household? Our medical faculties, our examining boards, our associations and societies are composed of the same men. Our health officers are members of most of these. In a word, there is no part played in medicine, in all its branches, in which the entire profession has not its interests and its representatives.

Educate the student in "Applied Therapeutics," or common-sense medicine, and you have taken the greatest step of all in the uplifting of the profession at large, and the greatest protection to citizens against the ignorant.

These things are far more necessary than instructions in bandage-rolling, and the like. They are public demands, and, as a public benefactor, the doctor should and must be made familiar with them. Thus will our field of therapeutics broaden, and thus will the practitioner be fully prepared from the start to take his place in line in the noblest profession on earth.

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ARTERIOSCLEROSIS; ITS CAUSES AND SIGNIFICANCE.*

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During recent years medical literature has been replete with the subject of arteriosclerosis. The full discussion of this disease, so universally accorded lately by physicians, has done much to arouse a proper appreciation of its significance, and the writer believes, has opened the door of truth to a most important, but yet only partially explored field of medical investigation: the problems of which, when solved, will throw much light upon many disease processes now obscure and unexplainable. No examples of this morbid process need be cited to prove its importance as an internal disease; for every clinician is constantly reminded by direful experiences, occurring all too often, of its baneful possibilities. Its ugly termination may show itself in divers ways. Slow, insid-

ious, unattended oftentimes by alarming symptoms—patients suffering from this disease suddenly suffer the most extreme results, if not death itself.

Causes. Degeneration in the tunics of blood vessels is brought about by a number of causes, underlying them all there being one fundamental agent. Chief among the causes are: Longevity, long continued toxemia, persistent hypertension of blood streams, syphilitic blight, vocation, habits of eating and drinking, over training or overworking of muscles, and renal disease.

(1) *Age.* That time-honored saying, "A man is only as old as his arteries," expresses the idea that old age and arterial degeneration go hand-in-hand. It is a cause. Old age, length of years, when wasting and loss of weight appears in some, as shown by Cabot, or when corpulence or overweight appears in others, arterial degeneration is often found. The walls of the blood-vessels through which, for years has coursed a stream of blood—oftentimes wanting in purity, oftentimes under high pressure—oftentimes obstructed by congestion and inflammations in the parenchyma of viscera—become dilated, then thickened and hardened.

But old age is not the only time of life when sclerosis of blood vessels is seen. It may appear in early life. One observer has recorded a case at twenty-eight years of age. Montard-Martin has reported a child, without kidney disease, or syphilis, dying of small-pox, showing sclerotic plaques in the aortic orifice, and in the trunk of the aorta, with calcified aortic leaflets. Andrel has confirmed this by post-mortem on a girl eight years old. Brooks has observed coronary sclerosis in a boy fifteen years old; and Hening has reported congenital sclerosis in the aorta of a fetus whose mother during pregnancy had an attack of acute rheumatic polyarthritis. These observations warrant the speculation that arteriosclerosis is not alone a disease of the aged, but is also seen in earlier years of life.

(2) *Prolonged Toxemia.* This is another accepted cause of arteriosclerosis. The belief now is that this one cause is the underlying factor in the production of arteriosclerosis in every instance. Time forbids entrance into that fascinating field of study now. We must content ourselves with the mere statement of

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the fact. That gout, alcohol, lead, aborted metabolic elements, deranged internal secretions, accumulation and absorption of purin bodies, and other toxins in the blood serve to produce arteriosclerosis, are accepted facts. Also, infectious diseases, typhoid fever, rheumatic fever, small-pox and other infections, are known to cause arteriosclerosis. For instance, Thayer showed, by post-mortem examination in 180 persons who died of typhoid fever that 52 per cent. exhibited manifest arteriosclerosis.

(3) *Hypertonus of Blood-stream causes sclerosis of the vessels.* A high degree of blood-pressure, maintained in blood-vessels tends to produce changes in the texture or histologic structure of the vessel wall by first producing a state of dilatation, then hypertrophy, or hyperplasia, and finally hardening the wall and narrowing the channel. In persons whose vocation requires of them, more or less, constant use of one or two special parts of the body, early signs of arteriosclerosis will develop in those parts so exercised. Beginning with excessive use, the hypertonus resulting brings about the condition of sclerosis. This is seen exemplified in the extremities in laborers, miners, smiths, in whom a great blood supply is demanded in the muscles of the arms and hands, legs and feet. Also we find arteriosclerosis in persons who use alcohol habitually. This is due to the direct action of the alcohol no doubt. But it is also believed to be produced by the prolonged hypertonus maintained by the artificial stimulation. Again, in persons of a corpulent build, betokening a habit of over-indulgence in eating and drinking, where the mesenteric vessels have been kept in a state of hypertonus for too long a time, are found evidences of arteriosclerosis. Again, a condition of obstruction to the normal passage of blood through the parenchyma of viscera producing a resultant hypertension in the vascular channels, may cause a condition of arteriosclerosis.

(4) *Syphilis.* This is an undisputed cause of sclerosis in blood vessels. It is a very frequent causative factor. The lentic process acts directly upon the fabric of the tunics. Here hypertonus is a resultant, not a precedent factor. The walls of the arterial structure, from the aorta to the finest capillary, by this lentic inflammatory product are misshapened, and

such condition causes an obstructive exudate in the channel, engrafting hyperplastic connective tissue in the tunic layers and cementing the perivascular structure.

(5) *Vocation.* In laborers, mechanics, employees of breweries are found arterial degeneration. The reason has been assigned above. But it is not only the mechanical worker, and the indulgent worker in the brewery that has this disease condition, for it is in these later years found among those who follow professional walks of life. Ministers, teachers, literary men, brokers, are often the victims of this insidious abnormality. In this class of workers it is not always the general sclerosis that is to be feared, but rather a local type, often involving the cerebral arteries. This is explained by the fact that the cerebral arterial blood channels, under tax of long hours of close mental application, are kept in a state of hypertonus as a result of the larger demands upon the circulation in this region. Arteriosclerosis in the encephalon, in men about the fifth or sixth decade, following the professional walks of life, is a present-day evil and menace to that class of valuable workers which can hardly receive too forceful attention. These persons, often eating and drinking without regard to the requirements of the physical being, working assiduously at their callings, in many cases leading the temperate life, become the victims of this vitally destructive process which may unfit them for the mature work of life, or may cut them off without warning in the very prime of life.

(6) *Overeating.* Perutz has clearly proved, as have many other observers, that overeating is a direct cause of sclerosis. Of the refinements of the process by which nutritive elements, whether or not reaching the last degree of metabolism, it shall not be our purpose to deal. But it is known that the effect of over-indulgence in eating is productive of the degeneration of the arteries.

(7) *Kidney Disease.* Chronic kidney disease is consonant with arteriosclerosis. The agencies causing the one produce the other. The kidney may primarily undergo inflammatory changes to be followed by hypertension and sclerosis of the renal artery, and subsequent sclerotic change in other and general vessels. On the other hand, sclerosis of the splan-

chnic vessels, or the aorta, or the palpable arteries may occur first, to be followed by sclerosis of the glomerulous tuft, the capillaries about the convoluted tubule, the degeneration of the parenchymma and hyperplasia of connective tissue in the kidney. With maintained hypertrophy of the left ventricle, chronic kidney diseases may be considered active in producing arteriosclerosis.

Pathology. Thoma's conception of the pathology of arteriosclerosis is accepted as correct, it being explanatory of conditions previously puzzling. Stated briefly, it is this: Hypertonus first produces loss of tone in the medial tunic, which results in dilatation of the vessel; and, secondly, this is followed by hyperplasia of connective tissue in the subendothelial layer of the intima which process when established brings about narrowed calibre, inelasticity, and hardening of vessel wall.

Pathologically, Councilman has divided arteriosclerosis into the nodular and the senile, or diffuse types.

The nodular form is characterized by the formation of circumscribed sclerotic areas which appear as white, yellowish or yellowish white flat plaques scattered about in the walls, especially the aorta, and often about the mouth of its branch. This alteration consists in a circumscribed thickening of the intima by connective and elastic tissue formation; later these patches undergo degeneration, resulting in necrotic or atheromataous ulcers or abscesses. In the bottom of these necrotic ulcers may be built up lime concretions or chalky stalagmites.

The diffuse arteriosclerosis is the usual and widespread variety. There are no projections in the lumen of the arteries unless there is an occasional elevation from an underlying hyperplasia. Microscopically it shows degeneration, if not marked necrotic and hyaline changes, involving muscular and elastic properties of the tunics. The intima shows thickening and subsequent narrowing of the lumen of the vessels. The small arteries, Councilman says, "show a thickening of the wall, due to the formation of a homogenous hyaline tissue within the muscular coat. In many small arteries nothing can be seen of the elastic lamina; in others only a fragment can be made out; in others it is preserved. The muscular fibres of the media show marked atrophic changes."

A general arteriosclerosis shows a condition of hardened walls in the arm, leg, neck and about the temple. When this is established, gross change is palpable to the finger; there is noticeable a hardened, beaded, brittle feel. The heart shows, in these mature cases, certain changes in the myocardial structure. The kidney, also, may show pronounced structural alteration.

But it is now conceded without dispute that there is found oftentimes, a condition of local arteriosclerosis which may show itself clinically without palpable signs of general arterial change. There may be sclerosis in the coronary arteries without external evidences of sclerosis in those arteries palpable to the finger; so, in the splanchnic vessels, in the cerebral, and pulmonary arteries likewise. Again, there may exist a condition of sclerosis of the aorta, above the diaphragm, even of its entire extent without the vessels of the extremities giving signs of such change. To corroborate this view, Brooks noted in 400 cases of arterial sclerosis 270 cases of sclerosis of the coronaries, of which only 154 showed sclerosis in the superficial arteries. Similar observations have been made regarding the cerebral arteries, and Möncheberg has reported two cases of arteriosclerosis of pulmonary artery with high grade hypertrophy of the right heart without valvular defect; and Romberg, from Curschman's clinic, has reported a case of a young man, twenty-four years old, with extensive pulmonary arteriosclerosis, in which the main branches were dilated and the small branches were in state of marked arteriosclerosis, while the aortic side was normal. Abdominal arterio-sclerosis has been demonstrated by Henry Huchard and others. In the splanchnic vessels, mesenteric arterials and the lower aorta this condition of local arteriosclerosis has been found to exist. The explanation of the term "intermittent limping" has arisen from this local condition prevailing in the lower abdominal vessels.

Symptoms. The significance of arteriosclerosis can only be interpreted by citing the main, if not the detail, events which are noted under the head of symptomatology. This subject may be divided for our convenience into two departments: (1) those symptoms arising, or noticeable, before pronounced and established gross changes appear in the artery, during that

time between the beginning irritation of the tunics and that known as a condition of readily apparent sclerosis; that time by some described as the stage of presclerosis or incipient sclerosis; (2) those symptoms occurring after arteriosclerosis is mature when the arterial wall is in a state of fixed degeneration.

(1) *Presclerosis*. While it is difficult, in many cases, to demonstrate pathologic changes in arterial wall, illustrative of that stage called presclerosis, yet the experience of every clinician is rich with cases exemplifying this condition as proved by subsequent events or by therapeutic test, or co-incident evidence. These cases show no state of hypertension by sphygmomanometric reading, no palpable hardening in the arterial wall under the finger. There is present no cardiac or renal change to serve as explanatory, or spasm in the arteries, as evinced in peculiar symptoms, which occur prior to the gross modification of the arterial wall. This is a most fascinating field for the clinician, and one fruitful of much profitable inquiry and investigation, and one which we must, necessarily treat in a paper of this kind with only the crudest insufficiency. But this view, of presclerosis has been championed by Henri Huchard, who expressed this opinion after an extensive study of sclerosis. O. Josue, in *Medical Press* of Paris, under title, "Early Signs of Arteriosclerosis," confirms this view, and speaks of that state of the arteries when the elasticity is sluggish, when response to stimuli of contraction and dilatation is tardy, when a condition of spasm prevails in arterial walls.

These symptoms of incipient arteriosclerosis may be vaso-motor, nervous, respiratory, cardiac, intestinal, cerebral and so on.

Of cerebral symptoms, there may be loss of ambition, a change of mental stamina, impairment of memory, laborious speech, despondency, irritability, somnambulism, and headache. The headache is more or less constant, varying in intensity, being periodically severe. Its presence is felt in the form of a throbbing oppression within the skull, which is easily excited into an attack of great intensity by worry, business activity, physical effort or alcoholic indulgence.

That condition, neurasthenia, sometimes is explicable only on the basis of incipient scler-

osis. Those cases in men about the fifth decade characterized by mental unrest, illusions and hallucinations of one kind or another, suspiciousness unusually acute, seem to be often due to the unpathologic entity termed presclerosis. In other cases of this kind there will be found complaints of vertigo, oppression in the head, sluggishness of mental action, numbness in extremities, and maybe delayed action in the hands or feet, or some other exhibition of impairment of motor control and activity.

As confirmed by A. Robin, there are certain syndromes of the stomach and of the intestinal functions which are attributable to this embarrassed arterial supply. Certain abdominal pains, classed as splanchnic neuralgia, or angina abdominalis, or intermittent claudication in the abdominal viscera which are attributable to this state of the circulation.

Those attacks of the heart, ranging from angina vera to angina sine dolore may be due to this condition of arterial spasm prior to the establishment of the fixed arterial degeneracy. Also attacks of dyspnea and tachycardia, not connected with certain well known lesions of these organs may be classed in some cases as admonitory signs of arterial sclerosis. Confirmatory of this contention I shall, briefly as I can, cite a case illustrating a group of like cases which I have seen within the last few years.

Case.—White, age 55 years, office man in a large manufactory, engaged for many years in large business interests; of medium size, and apparent good health. His personal history showed no serious sickness for twenty years. Family history gave no information affecting present status of the patient. He came to me complaining of insomnia, irritability, despondency, dizziness, dull headache, lack of energy and general feeling of mental unrest and dissatisfaction. He complained also of tingling in the ends of his fingers of the right hand and heaviness and weariness in the leg on the same side. Examination of heart showed accentuation of second aortic sound, but no other noteworthy cardiac sign. Blood tension was 118 mm. Hg., (Cook). Kidneys appeared, except for some increase in amount of urine, to be in good condition. Eyesight was somewhat impaired. This condition persisted for several days, in spite of strong cathartic action, but

under the use of the nitrites he was relieved. This case has been now under observation for about two years, and this cerebral syndrome, while appearing and threatening the patient from time to time, has never reappeared to any serious degree. He is now performing his daily task in his office under the restrictions of diet and the limitations of daily habit, and by use of the nitrites with more or less constancy.

(2) *Stage of Established Sclerosis.* In considering the symptomatology of arteriosclerosis one must set right the present relationship of blood pressure as read by the instruments of precision which, in late years, has been so largely influential in making this important clinical entity assume the place of pre-eminence it has attained. By means of the sphygmomanometer, for instance, it has been learned that the blood pressure in normal degree of tension will send Hg. 115 (Cook) high. But it is of course, acknowledged that with the variety of instruments, some being of one mechanism and some another, and review of other varying influences of the subjects examined, the blood pressure, so called, may range, normally, between 115 and 140 mm. Hg. But a blood pressure maintained above this degree is one of hyper-tension, and is indicative of more or less serious obstruction on the blood stream. But because of the connection of hypertension and arteriosclerosis, so often considered together in the discussion of the subject, it must not be thought that every case of hypertension necessarily means arteriosclerosis. Hypertension may be due to other things than arteriosclerosis. Again, serious arteriosclerosis may exist and hypertension, as shown by the sphygmomanometer, may be absent. Then we may say that the sphygmomanometer, under certain conditions, may be relied on to depict the degree of arteriosclerosis as represented in the resistance of the arterial wall in yielding to the instrument. It may be affirmed that this instrument will show to the observer a state of hypertension in the arteries when any one of the following conditions exists: (1) In all cases of chronic renal disease; (2) in cases of cardiac hypertrophy showing a condition of arteriosclerosis of the aorta above the diaphragm; (3) in those cases in which there is sclerosis of the vessels of the splanchnic region. The idea that the sphygmomanometer can be relied upon to detect

arteriosclerosis whenever existing must not be entertained. It is an instrument of great usefulness, but must be used with a clear understanding of the limitations connected with its operation.

It is not my purpose to describe a case, or cases, of general senile sclerosis; to describe the symptoms patent to cases of pipe-stem arteries as felt in the wrist and in the temporal region of old persons. But it is our purpose to take certain regions commonly the sight of sclerotic changes, and with more or less brevity, illustrating when possible by a case personally seen, to describe regional arteriosclerosis.

HEART SCLEROSIS.

Cardiac enlargement may be either a cause or an effect of arteriosclerosis. The myocardium may become hypertrophied as a result of the resistance offered the blood stream as it comes into the aorta where the walls are resistant and unyielding, due to sclerosis of the tunics. This may result without any lesion (organic) in the aortic cups. Then, too, sclerosis of the aorta may be produced by the effect of an hypertrophied left heart throwing, with redoubled force, a column of blood into its channel, which condition prevails in aortic regurgitation. So the heart must be always considered when speaking of sclerosis in the aorta. But under the head of heart sclerosis we can only rightly consider the circulatory vessels of that organ. The coronaries should be carefully considered in this connection. The coronary arteries, without coincident outward corroboration, may give a distinct syndrome, individual to sclerosis of these vessels. Brooks, as stated above, proved this by post-mortem examination. The first indication of sclerosis of the vessel oftentimes will be an attack of angina pectoris—displaying its assembly of symptoms in the form of acute agonizing pain over the precordium, with dyspnea, darting pains down left arm and up the neck. I recall a case of angina pectoris in a public school principal some six years ago which illustrates the fact that this condition appears without warning or without coincident outward arteriosclerosis. He had in this attack and in subsequent attacks covering many months, all the symptoms of angina pectoris, modified by the treatment, and appearing with less severity as months went by. But the palpable arteries were not in any degree in a

state of sclerosis. The use of the nitrites, which were invariably used in these attacks, gave him relief. This case, which I have recently cited in more detail in a paper on angina pectoris, illustrates another phase and type of sclerosis, in spasm in the cerebral vessels. I will again refer to it under that heading.

CARDIO-RENAL SCLEROSIS.

Cardiac hypertrophy and renal disease are consonant, sooner or later, with degeneration of the blood vessels. Elliott made the observation on sixty cases of Bright's disease, and showed that the average blood pressure reading was 190 mm. Hg. In every case there was marked hypertonus and arteriosclerosis. When renal disease is established there is invariably found a condition of arteriosclerosis with the symptoms of kidney disease, hypertension of blood stream, accentuation of aortic sounds and hypertrophy of that organ. As long as compensation can be maintained in the vessels and in the heart, the distressing symptoms will be wanting, but when these fail there comes a long train of discomforting symptoms.

ABDOMINAL SCLEROSIS.

Perutz describes a condition of periodic syndromes of the abdomen, characterized by paroxysmal pain of more or less severity, due to spasm of the arteries of the region when in a state of sclerosis. There is much proof extant to show that the arteries of the splanchnic region are, more commonly than was formerly thought, prone to local sclerosis. It is held that these periodic attacks of pain, sometimes called angina abdominalis, are due to spasm of sclerotic arteries of that region, and that the pain is referred to the mesenteric and sympathetic plexuses. It is also held that in this state of excitability these vessels are peculiarly susceptible to the untoward toxic action coincident in the intestinal canal during such times. When the acknowledged important vasomotor power of the splanchnic arteries is recalled, it is easy to understand the significance of sclerosis of the arteries excited to a spasm by the direct action of irritating toxins from an intestinal canal illy supplied with sufficient vascularization. This clinical fact must be more patent when we reflect that it is in this territory compensatory action is looked for in cases of sclerosis or embarrassed circulation in other parts of the body. That same periodicity, or intermittency marks

this type of local arteriosclerosis is significant of that in other local arteries; for instance, in the case of angina pectoris. Here in these lower vessels of the abdomen is found another phenomenon, termed "intermittent limping." Osler says, "Intermittent lameness, or claudication, the dysbasia (difficult walking), angiosclerotica of Erb, the crucial angina of Walton, are associated conditions, and due to arteriosclerosis of the abdominal aorta and iliac arteries."

In addition to the intermittent pain of abdominal arterial spasm, there are evidences of intestinal atony and colic, even symptoms of gastric disorder, of neurasthenia, nervous dyspepsia; and even hemorrhage has occurred; and one author says that these cases have been taken for ulcer and cancer of the stomach and intestines. Gastro-intestinal crises, then, must not be considered as being without connection with arteriosclerosis of vessels of that region. Then, too, the significance of the blood pressure is well summarized by Janeway, who says "without involvement of splanchnics, increase of blood pressure is not the rule."

CEREBRAL ARTERIOSCLEROSIS.

That there may be arteriosclerosis of the cerebral arteries, with or without general palpable arteriosclerosis, has been clearly and unmistakably demonstrated. Collins has proved, by post-mortem examination (*N. Y. Med. Jour.*, 1906, p. 1167) that cerebral vessels exhibit local arteriosclerosis without the same being seen in the palpable arteries of the body. In addition to this post-mortem proof, I wish to recur to the case of the public school principal cited under the head of angina to show that the clinical probabilities are that cerebral arteriosclerosis can and does exist.

On December 30, 1908, about six years after the first attack of angina pectoris cited above, I was called to attend this man. He was found in a drug store near the place where he had fallen as he was placing mail in the post-box. When I greeted him, he replied, "Well, Doctor, this is the last of me." Hurried examination showed partial paralysis of right arm and leg. He was taken home. Paralysis soon became total. Total loss of use of that arm and leg persisted without any impairment of mental faculties, and no facial involvement. Next morning gradual return of the use of the arm

and leg became apparent, and before many hours he had good command of both. After a fortnight's rest in bed he was allowed to sit up in an arm-chair by his bed for a short time. From this he seemed to receive no injury.

The day following this I was hurriedly called and found that the left side was paralyzed as far as his leg was concerned, while the left arm was performing, involuntarily and much against the will of the patient, incoördinate movements across his face, constantly getting in his way, to his disgust and annoyance. The speech mechanism was plainly deranged, speaking in a jerky, nervous style, using the same word many times before reaching the end of the sentence begun. He was soon affected by illusions and hallucinations, which he would, in his embarrassed speech, endeavor to describe. This state of paralysis and incoördination of movement, under treatment, subsided in a few hours, but the speech center and the visionary symptoms were much more reluctant in leaving the patient. In fact, the speech was months assuming normality, if it is really quite normal now. The case was treated on the belief of spasm of the cerebral sclerotic arteries. And the temporary and transitory inhibition of cerebral centers under that treatment, with evidence of this man's previous series of attacks of angina pectoris, verified and justified that view. It is noteworthy that this case has never showed sclerosis of general palpable arteries. When he consulted me the other day in my office his blood pressure read 115 mm. Hg. (Cooke).

Walton and Paul, in examining a series of 100 cases presenting marked and obvious sclerosis of palpable arteries, to verify or disprove the usual nervous symptoms assignable to sclerosis, found vertigo, apoplectiform attacks in 34 cases, progressive loss of memory in 48, insomnia in 30; irritability, anxiety, morbid fears were found in half.

PULMONARY SCLEROSIS.

Hypertonus in the lesser circulation brings about a secondary sclerosis in the pulmonary vessels, and is probably more often associated with mitral stenosis and emphysema than any other condition. The case, as reported above, by Moncheburg, is corroborative of this affection of the pulmonary branches. These cases are affected with periodic attacks of dyspnea; they are generally beyond middle life,

more frequently males than females, and are usually of the laboring class, and they are annoyed by a bronchial catarrh. The sclerosis of the pulmonary circulation of middle life affects unfavorably the prognosis of such persons who are taken with inflammatory conditions of the lungs.

SKIN VESSELS SCLEROTIC.

Raynard's disease is a disturbance in the vessel wall in arteries of the periphery, which disturbances assume the degree of sclerosis, in some cases, and produce a local cyanosis, and maybe ultimate gangrene.

The Stokes-Adams Syndrome is explained upon the basis of sclerosis of the arteries supplying the medulla. This condition is characterized by slowing of the pulse to the low count of 20 per minute, either regular or markedly irregular, with great tension, resisting the influence of diffusible stimulants and exercise. Examination of heart during an attack shows auricular contraction persistent, and ventricular contraction more or less absent. Syncope may or may not exist. The attack subsides to be followed by rush of blood to head and distention of blood vessels of the cerebrum.

Biot's Respiration is an apnea.

Cheyne-Stokes' respiration is sometimes associated with it, giving apnea and hyper apnea. Both are due to sclerosis of cerebral vessels with spasm.

Finally, our view of the significance of arteriosclerosis must be largely altered over the view held regarding this affection in days past. It should be considered in its very incipency, and it must be treated before that condition of established hardening begins. The derangement of the mental faculties of neurasthenics and the erratic persons, with which this time is so prevalent, may be due to spasm of the supersensitive arterials, in more or less state of sclerosis. Such cases, properly selected and carefully treated, may secure relief from the impending condition and abort a pathologic degeneracy. We must not rely on instrumental interpretation for our data—although the blood pressure instruments have their important place in considering these cases. The careful examination of the patient must be practiced, and a prolonged and more or less constant surveillance of his habits and food must be had to secure satisfactory results.

1135 West Franklin Street.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.

Professor of Principles of Surgery and Clinical Surgery,
University College of Medicine,
Richmond, Va.

LECTURE XLVIII.

Surgical Fevers.—Mechanism Regulating Temperature of the Body; Causes of Its Disarrangement—Classification of Surgical Fever; Aseptic Fever; Autotoxemia Sappremia; Definition—Pathology—Causes—Symptoms—Diagnosis—Prognosis—Treatment.

The normal temperature of man is said to be about 98.4 degrees F., and this is maintained in health with practically little variation, regardless of whether he is in the tropics or in the arctic regions, by an arrangement called "thermotaxis." Briefly stated, heat is produced by combustion, and is dissipated by radiation and evaporation, and the two processes must be correlated in order that the mean temperature may be constant. If the production of heat should exceed its loss, the temperature would rise; and if the production of heat was less than the amount given off, it would fall. As a matter of fact, both of these processes are subject to constant variations. Thus, for instance, after taking food, or after vigorous exercise, heat production is increased; while during abstinence from food and freedom from exertion, it is lessened. These changes are balanced, however, by a corresponding alteration of heat loss, effected by variations in the circulation and respiration, by the dilatation or contraction of the cutaneous vessels, and by the altered amount of moisture of the skin, varying from insensible perspiration to copious sweating. These changes are accomplished by the action of centers in the brain. In a word, man is an automatic, self-regulated stove, with a delicate and beautifully adjusted thermostat.

In disease, this mechanism becomes disarranged, owing to the influence of new and unusual factors, and there is elevation of temperature, called *fever*. This is most frequently due to increased heat production, but, of course, may be due to diminished heat loss. In case

of microbial infection, the presence of toxins in the blood acts by stimulating the thermogenic centers in the brain. In general, it may be stated that fever is caused by presence in the blood of a pyrogenous substance of an organic nature, due either to cell disintegration, to the absorption of products of putrefaction, or to the action of bacteria on the fluids and tissues of the body itself.

SURGICAL FEVER.

The term surgical fever, strictly speaking, should include all types of fever occurring in a patient the victim of injury or operation, or suffering with a disease remediable by surgical measures. A study of the subject, however, from this broad standpoint is not practicable, and hence the term will be limited to fever occurring purely as the result of an injury or operation. Even with this interpretation, it is difficult to present the subject satisfactorily, as no two authors adopt the same classification, and also because many different and meaningless terms are employed in literature to designate the various types of the condition. The division that will be adopted here is based on the etiology as far as this is understood at this time, and is as follows:

1. *Aseptic fever*, due to the absorption into the system of the products of aseptic tissue necrosis. Under this head comes simple traumatic fever.

2. *Septic intoxication*, due to the absorption into the system of the products of putrefaction. Under this head come autotoxemia and wound sappremia.

3. *Septic infection*, due to the introduction into the system of living pathogenic organisms. Under this head come septicemia and pyemia.

I. ASEPTIC FEVER.

Aseptic or simple traumatic fever is due to the absorption into the system of nucleins and albumoses, incident to aseptic tissue necrosis at the site of injury.

Pathology. It has long been known that the introduction into the circulation of certain harmless substances was capable of producing an elevation of temperature. The phenomenon is sometimes seen after intra-venous infusion of normal salt solution, after transfusion with blood from a healthy animal, or after the injection of pancreatin, pepsin or trypsin. It is believed by Bergamann that the fever in the

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

above instances is caused by destruction of red and white blood corpuscles and the liberation of fibrin ferment; and he, therefore, suggests that the condition be called "fermentation fever," owing to its being due to the presence of fibrin ferment in the blood. In aseptic fever there is no infection of the wound; healing occurs promptly, and there is restoration of function more or less complete, according to the severity and character of the injury. There are practically no changes in the blood, although occasionally a trivial, non-progressive leucocytosis may be noted.

Causes. Aseptic fever is likely to follow an operation or injury if strong antiseptic solutions are used in the wound, causing superficial necrosis, with subsequent disintegration of cells. It is also noted where, owing to imperfect hemostasis or inadequate provision for drainage, a blood-clot forms in the wound, which, breaking down and undergoing absorption, introduces pyrogenous substances into the circulation.

Symptoms. Fever makes its appearance within a few hours after the infliction of the wound, and the temperature rapidly reaches its height, varying from 100 to 104 degrees F., though a temperature over 102 degrees is very exceptional. It continues with little intermission, to drop suddenly to normal within two or three days. With the exception of the fever, there are practically no symptoms: the patient feels well, and cannot understand the solicitude of his nurse or attendant.

Diagnosis. This is based on the absence of the local signs of infection, on a history of the use of strong antiseptics in the wound, the probability of the retention of blood or secretions, the fact that the fever was not inaugurated by a chill, and the lack of coincident symptoms, such as nausea, malaise or mental depression.

Prognosis. This is good, as patients invariably make a spontaneous recovery.

Treatment. The treatment is entirely prophylactic, and consists in avoiding the use of antiseptic solutions sufficiently strong to cause coagulation necrosis, and in being careful to arrest all oozing and bleeding before closing the wound, and, if this is not possible, to provide for the escape of secretions by efficient drainage.

Should aseptic fever develop, no treatment is necessary, as it shortly runs its course, without serious detriment to the patient. The importance of its prophylaxis is chiefly on the surgeon's account. No matter how careful the operator has been in his technique, or how plain the symptoms may be in a given case, there is always a doubt in his mind as to the accuracy of his diagnosis, and he is never free from anxiety until the patient's temperature becomes normal.

II. SEPTIC INTOXICATION.

Septic intoxication is the constitutional effect produced by the absorption into the system of the products of putrefaction, and is, therefore, caused by saprophytic organisms. This type of fever may be subdivided into *autotoxemia*, caused by defective elimination of metabolic substances, or decomposition of food in the intestinal tract; and into *sapremia*, due to the presence in a wound of dead tissue infected with saprophytic organisms, whose putrefaction results in the formation of a toxin. It will thus be seen that autotoxemia and sapremia are identical in nature, both being due to the introduction into the system of a chemical poison, the difference being that, in the first, the toxic material is formed in the tissues or a normal cavity of the body, while in the second, it is formed in an accidental or operative wound.

1. *Autotoxemia.* Autotoxemia is due to the presence in the system of an excess of alkaloidal substance, caused by faulty metabolism, retrograde metamorphosis, or fermentative changes.

Pathology. It is a well known physiological fact that some substances elaborated by cells are injurious to these same cells if the product of their activity accumulates upon them. A man only escapes intoxication from self-poisoning by the eliminative action of the skin, lungs, kidneys and intestinal tract. For instance, it is said that he secretes enough toxic matter in the bile in twenty-four hours to kill three men of the same weight as himself.

Metchnikoff, in his book on "*The Prolongation of Life*," (1908), attributes senile changes in man and animals principally to chronic autotoxemia, due to putrefaction in the intestinal canal. He shows by many illustrations that animals whose food remains for a long time

in their intestines live but a short period, as compared with those whose excreta are ejected almost as rapidly as formed. He states that running birds, who have large intestines, containing an enormous number of bacteria, live only a few years, while flying birds, who have no colon or bladder, and therefore, a scanty intestinal flora, live for a much longer time. He cites the case of parrots, ravens, and even birds of prey who feed on putrid meat, who live to be from 80 to 100 years of age. Just as under normal conditions, chronic autotoxemia produces senility, so under abnormal conditions, acute autotoxemia may produce fever.

Causes. The causes of acute autotoxemia are the accumulation of excrementitious matter in the tissues, or the collection of putrescible material in the intestinal tract. A surgical patient often develops a form of blood-poisoning in which the poison does not originate in the wound, and for which the surgeon is not responsible, except insofar as he has neglected to carry out certain measures in preparing the patient before the operation, or in treating him after an accidental injury, in order to make active the emunctories, and rid the system of toxic products.

Symptoms. The patient, two or three days after the injury or operation, or even later during his convalescence, loses appetite, becomes restless and fretful, and has a headache, coated tongue and foul breath. The bowels are constipated, and the urine is concentrated. There is no chill, but the temperature rises until it reaches 100 or 102 degrees F., and continues at this point, with practically no variation. The pulse and respiration are but little changed. These symptoms continue until, by proper treatment, the accumulated effete matter in the system is eliminated, when they rapidly disappear.

Diagnosis. This is based on the presence of the symptoms described, and on a history of improper preparation of the patient before the operation, or of inactivity of the emunctories afterwards. The condition must be carefully differentiated from infection, which can be done by an examination of the wound and failure to find the local signs of inflammation.

Prognosis. The symptoms usually yield readily to treatment. The condition, however, depresses the general vitality of the patient, re-

tards convalescence, and predisposes to infection.

Treatment. The importance of preventing acute autotoxemia in surgical cases is becoming more generally recognized. Patients before being operated on should be properly prepared. After an operation, the diet should be carefully regulated, and all the emunctories kept active, so as to prevent the accumulation of toxic products in the system. If symptoms of autotoxemia develop, the liver, bowels, kidney and skin should be made active by the administration of mercurial purgatives, by drinking large quantities of light water, and by the use of baths, alcohol rubs, and general massage. In those cases characterized by impending kidney breakdown, spartein sulphate given in one grain doses hypodermically is excellent in its results.

2. *Sapremia.* Sapremia is due to the absorption into the system of chemical poisons produced by putrefaction of necrosed tissue in a wound.

Pathology. For sapremia to occur, there must be a wound containing dead tissue infected with saprophytic organisms. Park likens the condition to the action of a hypothetical septic suppository. No germs are found in the blood or internal organs, because saprophytic bacteria cannot live in normally vitalized tissue. It cannot develop from a small point of infection, but must come from an accumulation of dead material in a space of considerable size, as it has been estimated that it is necessary for from one to two ounces of fluid, saturated with the products of germ growth, to be absorbed into the system in order to produce serious symptoms. As an example of sapremia, is usually cited the putrefaction fever following the breaking down of a blood-clot in the puerperal uterus. As long as this clot does not putrefy, it is disintegrated and discharged with the lochia, with the production only of aseptic traumatic fever. When, however, saprophytic organisms enter either during or after labor, putrefactive processes are set up, with the production of toxins and ptomains. Sapremia is not limited to absorption from the uterine cavity, but may occur from the putrefaction of a blood-clot, or any devitalized mass of tissue, wherever located. It was almost invariably seen in a grave form during conva-

lescence after the old operation of hysterectomy, where the pedicle was brought into the wound and strangulated with the ligature, or serre-neud. It frequently follows compound fractures or similar injuries, where there is devitalization of tissue, or the occurrence of concealed hemorrhage, followed by infection.

Causes. Sappremia is not due to infection of the blood or tissues of the body with pathogenic organisms, but is caused by the absorption of chemical poisons elaborated in a wound by the action of saprophytic or putrefactive bacteria on non-vitalized or dead tissue. For the condition to develop, three factors must exist: First, the presence of dead tissue; second, its infection with putrefactive bacteria; third, a sufficient length of time for decomposition to ensue, and for the toxins to be absorbed. In treating the condition it must be remembered that the symptoms are due to the absorption of toxic matter which, while being produced in a wound, amounts practically to being formed outside of the body.

Symptoms. Sappremia of grave degree is usually initiated about twenty-four hours after the accident or operation, by slight rigors or an actual chill, which is followed by fever, the temperature quickly reaching, in some cases, 104 or 105 degrees F. The fever is continuous, with slight remissions. The pulse is at first rapid and strong, but if a large dose of poison is absorbed, it soon becomes weak and irregular. The face is flushed and the tongue dry. There is complete loss of appetite, sometimes vomiting. The patient may be constipated, or may have diarrhea. The urine is concentrated, of high color, loaded with urates, and on standing becomes muddy. Nervous symptoms are usually marked: there is depression or irritability, restlessness or anxiety, and in severe cases, coma may ensue, generally terminating in death. An examination of the wound will show it to contain a blood-clot, or mass of devitalized tissue, undergoing putrefaction, as demonstrated by its disintegration, the presence of gas, and characteristic odor.

Diagnosis. This is based on the symptoms, and made certain by the discovery of dead or putrefying tissue in the wound.

Prognosis. This depends upon the amount of poison absorbed before a diagnosis is made, and the possibility of removing the putrefying

mass after its discovery, and thus arresting the further introduction of toxic products. Sometimes the initial dose of poison is fatal. Again, the symptoms may rapidly improve with the removal of a decomposing blood-clot, or detached fragment of placenta, and the disinfection and drainage of the cavity.

Treatment. Prophylaxis consists in preventing accumulation in a wound of material which can putrefy, or, in protecting devitalized structures which cannot at the time be removed, from becoming infected with saprophytic organisms. Thus, for instance, after compound fracture, opening and turning out blood-clots, and removing fragments of bone or devitalized soft tissue; or, in cases of senile gangrene, preventing decomposition by the disinfection and protection of the dead part. The curative treatment of sappremia consists in opening the wound, removing dead tissue, and thoroughly disinfecting the cavity and providing for its subsequent drainage. The constitutional symptoms must be combatted by eliminative and supportive measures. The bowels and kidneys should be made active, tonics such as quinine and iron administered, nutrition given in the shape of concentrated and easily digested food, and stimulants such as strychnine and whiskey prescribed in full doses.

Correspondence.

Osteopathy(?)

Editor Virginia Medical Semi-Monthly:—

When in the healthy course of events some item has been neglected, the neglect leads most-times to some rank sucker. This occurred again in the bone-philosophy. The skeleton is more than the shrouds of muscles and vascular organs, and the bones are more than the superphosphate of lime. In the last century, physiology pointed out the probable service that the marrow of the bones did in the blood-economy, being the quarters where the red blood corpuscles recuperated themselves. But the important hypothesis was not heeded, and the freebooters, prowling about wreckage, fought to advantage when they clamored they had discovered the bed of health and life. They might have become very useful, indeed, if they had modestly supplemented the neglect of regular

medicine. But they had spoiled their work by overdoing the scope of their possibilities. An eclectic doctor who took the treatment told me himself how rude was the novel method, and he was certainly not benefitted by it.

If there was in massage a modality which might have taught a lesson to the osteopathic ambition, it was mitigation. The first case that was treated on the continent of Europe occurred in Bremen, (Germany.) and a technical expert was called expressly from Sweden, the only country in which then medical gymnastics was cultivated, and a conservative premium sprung up at once that called it swindle, quackery, and what not, but reached not by their bluff as high as the stranger's art and science.

The case was one of long standing chlorosis. Under the routine medical treatment it had gone from bad to worse, and the family looked at the medical gymnastics as a fantastic experiment. There was hardly any vitality left; and the artist, as I may well call the Swedish expert, concluded at first sight that only exceptional measures could secure a success. He decided, therefore, to begin with magnetism, or massage without touching the body of the sick. He understood at once, that, no matter how tender would be the treatment, it would be too rough a handling. The girl was so weakened that she could not even bear that. So, the sagacious practitioner treated the body by massage, but kept away from the body he was operating on, an inch or an inch and a half, giving the frail anatomical structure the benefit of his vigorous intuition.

The effect was like a miracle. Exercise of the muscles was it the girl stood in need of, and the disconnected massage was the only admissible mode of its application; the only degree she she could bear. In a few days the gymnast proceeded to regular massage, and the girl made a rapid recovery, considering the poor state of health she was in when the doctor took her.

This one treatment made the reputation of the Swedish practitioner; he quit the Swedish army in which he was a commissioned officer, and founded a sanatorium in Bremen, where his eldest son, if I am right, is continuing it. The doctor himself, whose name was Axel Siegfried Ulrich, died a number of years ago.

If the osteopaths want to be given credit for

a scientific character, let them enrich the osteopathology to begin with. The therapy will follow: If Dr. Ulrich had not taken into account the weakened condition of the young lady, that was given into his hands, he would never have thought on the cure of such a case, by massage, without touching.

As far as I know, osteopaths, as they style themselves, do not base their rude manner of treatment on any bone pathology at all.

C. A. F. LINDORME, PH. D., M. D.

Atlanta, Ga., Aug. 1, 1908.

Book Notices.

Practice of Medicine for Nurses. By JOHN HOWARD HOXIE, A. M., M. D., Professor of Internal Medicine, University of Kansas, Kansas City. With a chapter on **The Technic of Nursing.** By EARL L. LAPTAD, Principal of the Training School for Nurses, University of Kansas. Philadelphia and London. W. B. Saunders Co. 1908. 12mo. 284 pages. Cloth, \$1.50 net.

This is "a text-book for nurses and students of domestic science, and a hand-book for all those who care for the sick." As a guide book for emergencies in practice, in the absence of the doctor, it gives good practical advice, and instructs the professional nurse what to do and how to do it, etc. The author recognizes that it is not the province of the nurse for her either to diagnose, or to prescribe for a case, except in emergency; but her duties are to carry out the directions of the doctor. This book strikes well the medium ground of saying enough and yet not too much. It teaches how to take and record temperatures, to note the pulse, respirations, appearance of skin in various conditions, the excreta, etc. It then considers the duties of the nurse in various diseases—infectious, constitutional, local, etc.

Editorial.

Medical Society of Virginia.

The preliminary postal card notice of the session of the Society, to be held in this city, October 20-23, 1908, has just been issued. This postal requests all members who propose presenting papers during the session to state the titles of the same, and that answers be in hand by September 16th at latest, as then the

program committee will have to arrange the order, and issue the program about September 20. Papers, the titles of which are not received by the Secretary by September 16th, will have to be unannounced on the program, and will have to be relegated to the last of the session, which practically means that time enough will not be left for their presentation except by title, and reference to the Publishing Committee for the Transactions.

The *Scientific* proceedings of the Society will begin promptly at 10 A. M., Wednesday, October 21, when an hour is given for the Reports of Cases—no one of which is to exceed five minutes; and the discussions of the same are also limited to five minutes by each speaker. At 11 A. M., the subject for general discussion—*Anesthesia and Anesthetics*—will be called for, and four leaders have been selected, each of whom is entitled to twenty minutes. After their papers have been presented, discussions will follow. When this subject is disposed of, papers will be called for in the order to be published in the official program. According to the custom of annual rotation of subjects, medical papers will have precedence this year; then surgical papers, and then the specialties.

As stated in last issue, there will be no night sessions on Wednesday and Thursday. Dr. Stuart McGuire proposes to give a reception on one of those nights, while the Commissioner of the State Board of Health, Dr. Ennion G. Williams, will request that the other night be reserved for a meeting of the members of the Virginia State Board of Health. This meeting will be composed of members of the Boards of Health of the cities and counties of the State under the auspices of the State Board of Health. About 300 members of the Medical Society of Virginia comprise these local boards. It is earnestly requested that there be a full attendance of these members.

The *Treasurer of the Society*, Dr. R. M. Slaughter, Theological Seminary, writes us of a most surprising deficiency of the treasury due simply to the carelessness of members in remitting their small annual dues of two dollars each. He says:

"Having returned from my vacation trip to Brazil, much improved in health, I find that I must enter upon a vigorous campaign of endeavor to replenish the treasury, as I am con-

fronted with the fact that it is empty. I would, therefore, appeal to those members in arrears, to *pay up promptly*, and relieve the present embarrassing situation.

"I call special attention to the fact that, under the old constitution, all members who owe four years' dues (or \$8.) will, on October 20th, become 'delinquents' and dropped from the Register and published as such. Also, under the *new* constitution (which will be effective October 20th), all who owe three years' dues (or \$6) will likewise become 'delinquents' and published as such, unless in the meantime—both those who owe \$8 and \$6 each—settle up their accounts before then.

"My books show that 59 members are in arrears to the amount of \$8 each, and 111 to the amount of \$6 each—making a total of 160 members who will become 'delinquents,' dropped from the Register of members, and so published, unless they pay up by or before October 20th. The total indebtedness of these parties alone amounts to \$1138. In addition, enough is due the Society by those one and two years in arrears, to make the amount now due by members over \$2,000. If parties will promptly pay up, all obligations of the Society for the current year can easily be met.

"Of course, the above statement has nothing to do with the annual dues falling due for the next year, when the Society meets in Richmond, October 20, 1908. It is hoped, however, that members will then come prepared to pay their assessments of \$2 for the ensuing year.

"The negligence of so many members in paying their back dues, in spite of repeated reminders of their indebtedness, is past my understanding. But I take this means of making, for this year, a final appeal to delinquent members to settle up, and save their right of membership in the Society, remove their danger of being reported to the session, and published because they do not pay their debts. Their attention to this matter will also relieve the present embarrassed condition of the treasury."

With such an appeal, will any one who owes the Society anything defer payment? The annual dues, per capita, only \$2—required of the members of the Medical Society of Virginia, are about the smallest of any State Society of the Union; and if members will only keep

their dues paid up, there is no reason to anticipate that the annual assessments, per member, will have to be increased to \$3, \$4, and \$5., as other State Societies charge. Besides, the pride or self-respect of doctors should make them unwilling to be published as "delinquent."

District Members of Executive Council of Medical Society of Virginia.

At duly held conventions of members of the Society, the following have been nominated to serve for the term of one year, till the session of 1909, as members of the Executive Council of the Medical Society of Virginia, for the respective ten Congressional districts of the State:

1st Congressional Dist.—Dr. Clarence Porter Jones, Newport News, Va.

2nd Congressional Dist.—Dr. E. E. Feild, Norfolk, Va.

3rd. Congressional Dist.—Dr. A. L. Gray, Richmond, Va.

4th Congressional Dist.—Dr. S. A. Hinton, Petersburg, Va.

5th Congressional Dist.—Dr. Jesse M. Shackelford, Martinsville, Va.

6th Congressional Dist.—Dr. George J. Tompkins, Lynchburg, Va.

7th Congressional Dist.—Dr. William P. McGuire, Winchester, Va.

8th Congressional Dist.—Dr. Tunis C. Quick, Falls Church, Va.

9th Congressional Dist.—Dr. J. T. Graham, Wytheville, Va.

10th Congressional Dist.—Dr. M. J. Payne, Staunton, Va.

During the first meeting of the session, October 20, five additional members are to be chosen by the Society in open session, to be known as Members of the Executive Council from the State at large. The president of the Society, Dr. Wm. F. Drewry, is an ex-officio member.

The Augusta County Medical Society

Held its regular business meeting at the County Court House, Staunton, Va., August 5th. Much important business was discussed, chiefly concerning illegal and advertised so-called healers and quack institutes. The following officers were also elected: President, Dr. R. S. Griffith, of Basic City; Vice-Presidents, Drs. W. F. Hartman, of Swoope; W. B. Payne, of Covington; and H. H. Jones, of Monterey;

Secretary, Dr. A. L. Tynes, of Fisherville; Treasurer, Dr. T. M. Parkins, of Staunton; and Censor, Dr. H. H. Grant of Hermitage.

Tenth Congressional District Councillor.

Members of the Medical Society of Virginia residing in the Tenth Congressional District at a meeting held at Staunton, Va., August 5th, elected Dr. M. J. Payne, of that city, as member of the Executive Council of the State Society.

Dr. Richard O. Rogers

Formerly House Surgeon, Memorial Hospital, Richmond, has become associated with Dr. J. Shelton Horsley, of this city, as one of his assistants.

The Southside Virginia Medical Association.

Will hold its next meeting at Courtland, Va., September 1st. Members are urged to bring their doctor friends.

FOR SALE.—Success Autobuggy, guaranteed by manufacturers against defects in material or workmanship. Engine broke after running two miles, because had no locks or cotterpins in working parts. Manufacturers offer to furnish new engine for \$80. Will sell cheap to get out of bad bargain.

CARTER WEISIGER, M. D.

Cumberland, Va.

Obituary Record.

Dr. John S. Apperson

Died suddenly at his home in Marion, Va., August 9, 1908, in his 72nd year of age. From the earlier years of the Medical Society of Virginia till his death, he took active interest in its affairs, and filled a number of positions of honor and trust. He was born in Orange County, Va., and moved to Smyth County when 25 years of age to enter upon the practice of medicine. He served as a surgeon in the Confederate army in Genl. "Stonewall" Jackson's corps. In 1891 he accepted the position of Assistant Physician at the Southwestern (Va.) State Hospital, which he resigned two years later. He then became interested in the mineral resources of his section of the State. He was twice married—his first wife being Miss Hull. Several children survive this marriage. His second wife was Miss Black, daughter of the late Dr. Harvey Black. Several children were also born of this marriage.

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Original Communications.

THE VOICE AS AFFECTED BY GENERAL CONDITIONS.*

WALTER A. WELLS, M. D., Washington, D. C.
Professor of Laryngology and Otology, Medical Department of Georgetown University, Washington, D. C.

It is customary in medical writings to class functional disorders under the head of symptoms and to refer them etiologically to structural changes in the organ or organs concerned in their production.

In the case, however, of certain specialized functions, subject to frequent and serious disturbances, out of proportion to the organic alterations, it not only is permissible to consider the functional disorders independently, but often advisable to do so.

The voice is a remarkable example of this sort of a function, as it is frequently affected to a marked degree in range, pitch and quality, when a most careful scrutiny of the vocal organs will fail to reveal any appreciable local lesion, or only such as are insignificant and insufficient to account for the existing disorder.

It is evident that under certain circumstances the voice affections are paramount, and that for practical purposes it is convenient to overlook the vocal organs themselves and seek elsewhere for the causation of the trouble. This is the case with the disturbance of the voice, not infrequently observed in certain of the general infectious diseases, toxemias and constitutional dyscrasias, and also as found sometimes in diseases of remote organs, whose influence is explained by the operation of the reflex mechanism.

Thus it is that the voice may become a valuable aid to diagnosis, and the general practitioner, we are confident, would gain measurably, both in the quicker recognition of many

*Read before the Medical Society of Georgetown University, March 28 1908.

obscure maladies, and in the juster appreciation of the gravity of a given disease, by a little more careful observation than is customary of the vocal utterances of his patient.

Alexander Skene says, "Voice and its modifications indicate the condition of the mind and body more clearly than any other factor in the long list of physical signs and symptoms presented a physician for his guidance in the great science and art of diagnosis."

Whether or not this be true, generally speaking, certainly in cases of children, we must admit that careful attention to such symptoms as these is one of the first duties of the pediatrician. When the child is too young to express to us his sensations by the faculty of speech, how important it is that we should study what may be indicated to us by the voice.

This brings us to remark that we are dealing here with the voice as distinguished from articulate speech.

Voice may be defined as the raw material out of which speech, the finished product, is manufactured. Originating in the vocal cords, it is through the intervention of palate, tongue, lips and teeth that the simple elementary sounds become eventually moulded into articulate speech.

Voice in its original state is composed of vocal sounds only; speech requires the addition of consonants, which are nothing more than various interruptions of the pure sounds by the organs of articulation.

Speech is an intellectual process, being the chief instrument for the communication of our ideas; voice expresses emotion only.

Speech, some cynic has said, was made for the purpose of disguising our thoughts; few, however, can avoid being betrayed by the voice, for, as the old adage informs us, "the tongue may lie, but the voice will tell the truth." In other words, though the lips speak falsely, the "tears in the voice" must betray the ill-concealed emotion of the speaker.

The voice has been called the mirror of the soul, so truly does it reflect its inward workings. Anger, sadness, modesty, joy, sympathy—how exquisitely and unfailingly are these emotions expressed.

The dramatic artist understands this well enough, and is as careful to impress the audience by the voice suited to the part as by the facial "make-up."

The gruff voice of the hardened tyrant, the soft, gentle voice of the heroine, the drawl of the comedian, and the sweet, silvery tones of the persuasive lover are familiar enough to us all; and in the right kind of play, too, you will surely not fail to hear the hissing voice that escapes between the closed teeth of the detested villain.

To properly appreciate the infinite variations of vocal utterance and to interpret it to advantage as a symptom, we ought first of all to be familiar with its normal manifestations, and the modifications which are peculiar to age, sex, race, nationality and environmental conditions. Of nationalities, the French and Italians are famous for their voices; sonorous and vibrant in the former; soft and melodious in the latter people. The Germans are especially distinguished by the guttural character of their voices, while the American, unfortunately, has a reputation as regards his voice, of which he cannot be proud. The typical "yankee" voice, according to our English cousins, is one that is strident, penetrating and possessed of an unpleasant nasal twang.

The voice differs also in a great measure according to age. Familiar to us all is the high bird-like piping voice of the child. The age of puberty is accompanied by a characteristic change in the voice, which we will mention when we come to the discussion of the influence of the sexual organs. As old age comes on, the quality of the voice is again altered. Ossification of the cartilages of the larynx set in at about the age of forty-five, and this, when well advanced, must affect the vibrating qualities of the organ and tend to produce the characteristic shrillness heard often in advanced years.

The great Shakespeare, in his seven ages of man, has graphically described it; of the sixth age he says:

"And his big manly voice,

Turning again toward childish treble,

Pipes and whistles in his sound."

Environmental conditions, such as climate, habitation, clothing and diet, have no doubt an influence for good and bad with regard to the function of voice production that are by no means negligible. Their bearing, however, is not specific, but they indirectly cause voice troubles by giving rise to catarrhal conditions in the upper air passage. We had best, therefore, refer their study, important though it be, to the subject of the general hygiene of these organs, and the causes of catarrh in general.

Under the head of dress, however, mention should be made of the effect of tight lacing in women, as that has a particular influence for evil upon the voice, by compressing one of the organs immediately concerned in its production. It is estimated that corsets in women, by limiting costal and diaphragmatic breathing, reduce the average respiratory capacity at least one-third. This, outside of its other ill consequences, is a considerable loss to vocal dynamics, which, in the case of professional voice users, is a serious hindrance.

Occupations such as expose the individual to extraordinary amounts of dust, smoke, or noxious vapors and fumes, cannot do otherwise than exercise a baneful influence upon the phonatory function.

The voice is of course especially liable to suffer in those whose occupations are such as to require a frequent or excessive use of this function. As examples, we have only to mention auctioneers, preachers, lecturers, advocates and school teachers. Sometimes the occupation is such that the individual is subject to the action of both causes at one time. Such seems to be the case of the school teacher, who, in addition to the strain of much speaking, is constantly exposed to an atmosphere laden with chalk-dust; or the railway employee, who has not only raises his voice to a high pitch to compete with the noises incident to railway traffic, but who must inhale an infinite amount of coal dust, soot and grime; or the auctioneer, whose hoarseness is proverbial, because he will, forsooth, ignore the dust that comes from musty tomes and second-hand furniture in the eager hawking of his wares.

Many toxic agents and chemical poisons have been found to have a more or less selective action upon the vocal organs. The ptomaine poisoning from the ingestion of fish has been observed to produce a paralysis of the vocal

cords. Toxic doses of lead are likely to give rise to peculiar phonic disturbances, due to an intensive tremor of the cords. Hoarseness is said to come about as a result of the habit of arsenic eating; copper, antimony and phosphorus may lead to similar results.

Alcohol in excess tends to produce a congestion in the entire upper respiratory tract that is not without injurious consequences to the purity of the voice. In acute alcoholic poisoning we may find a disturbance due to lack of co-ordination of the muscles of phonation. The alcoholic habitue may often be recognized by his deep-pitched, husky speech.

Tobacco, in many cases, seems to have no especially bad effect, if used in moderation. Smoking is no doubt more harmful than chewing, as here the effects of combustion are added to the poisonous action of the nicotine. The worst results are seen in those who have the habit of inhaling the smoke, and thus bringing its irritating influence to bear directly upon the delicate structures of the larynx.

That the voice will suffer in strength, quality or range as a result of certain general systematic states is the observation of many clinicians. In anemia, for example, the impoverished state of the blood operates to bring about an atrophic condition of the muscles of the larynx. As a consequence the voice is weak and thin in character.

Chlorotic girls find that their voices quickly fatigue upon use, and especially from efforts at singing.

The effects of malaria upon the voice has been studied by Lori, who found an aphonia to occur synchronous with the paroxysm. He described also an intermittent aphonia due to a paralysis of all the muscles supplied by the recurrent nerve.

Tuberculosis is a very important general cause of phonopathies. This may be naturally inferred from its well-known predilection for the respiratory organs, including the larynx. Even in its early stages, before discoverable alterations have occurred, the voice is generally enfeebled, and lacks sustaining power. Such a condition, with a persistent tendency to become hoarse from moderate use of the voice, in cases in which other lesions can be excluded, should lead us to a suspicion of incipient phthisis. Later on, as infiltration and ulcer-

ation occur in the region of the cords, the dysphonia increases up to the point of complete extinction of the voice. It may be well to recall that inasmuch as the lungs constitute the motor power for the production of vocal sounds, the dynamic element of the voice will suffer in cases of tuberculosis of the lungs, although the larynx remains unaffected.

Syphilis may produce alterations in the character of the voice, which to the trained ear are pathognomonic, and so we have the term *rau-cedo syphilitica* to refer to the hoarseness due to this cause. Some claim even to recognize congenital syphilis in the peculiarly disagreeable shrill voice of the new-born. In the acquired form, when the larynx is the seat of tertiary syphilitic processes, the voice is generally hoarse, dry and grating. In many cases the effect of the disease is felt in the disabled vocal organs, even when the laryngoscope will fail to show any marked local changes.

Such of the acute infectious diseases as are attended with catarrhal inflammation in the upper air passages, viz., measles, scarlatina, diphtheria, influenza, variola and typhoid, are likely to cause vocal disturbances of greater or less degree. Typhoid, in the form known as laryngo-typhus, will be accompanied with grave vocal affections, amounting often to complete aphonia.

It has seemed to me that the voice of influenza is often quite characteristic for this affection. It is not the hoarseness heard in an ordinary laryngitis; nor the thick voice of swollen tonsils, nor precisely the dead wood like voice of blocked nasal passages. I have seen many cases in which careful rhinoscopic and laryngoscopic examinations showed that the nose was practically free, tonsils uninvolved and the vocal cords but slightly, or not at all, congested, and yet the voice would be affected in a very marked and peculiar manner. It is the voice in which especially the timbre is altered; it is lacking in resonance from a loss of overtones which are needed to give a pleasant character to the voice, and it sounds weak and muffled. My theory is the grippe voice is due to the involvement of the nasal accessory sinuses, for which this disease, as we know, shows a marked predilection. It seems likely that these large air cavities, hollowed out of the bones of the skull, play a considerable role as

resonating chambers of the voice, and I should say that it is not necessary that they should become filled with pus in order for this resonance to become impaired, but that a general inflammatory thickening of the lining membranes would so alter the vibrating properties of their walls as to have a very decided effect.

Diphtheria will, of course, affect the voice in cases of the laryngeal type. We will have here a hoarse metallic, croupy voice, proceeding to complete extinction when there is an extensive deposit of pseudo-membrane.

Later on, voice trouble may develop anew as a result of laryngeal paralysis.

Cholera is said to be accompanied with a voice more or less characteristic, as is evidenced by the term *vox cholericæ*, which is applied to it. It is a high-pitched, thin voice, which at times becomes completely lost, the patient being reduced to whispering. It has been attributed to the dehydration of the muscular tissues of the cords.

That affections of the brain and nervous system would be accompanied by phonatory disturbances is what a priori we would naturally expect. Morelli, professor of mental disease, of the University of Genoa, investigated, with some interesting results, the alterations of the voice manifested in certain mental affections. He found in microcephalic idiots the articulation defective, and the voice having a lessened range. In senile dementia the voice is monotonous and lacking in color.

It sometimes exhibits abnormal intensity (hyperphonia) in the case of the maniac, while on the contrary, it is so feeble as to be barely heard sometimes in the case of the melancholic. He observed that the head tones were more often used in the cases of mental excitation, and the chest tones were more naturally employed in cases of mental depression.

The excited exaggerate the customary modulation of conversation, strongly accent certain words, and declaim in a dramatic tone; the depressed class generally speak in a monotone.

In general progressive paralysis, one of the first symptoms to occur is a change in the character of the voice, as a result of lesion of the bulbar centers. According to Duchek it has at first a cavernous sound, assuming later a tremulous egophonic character.

In hysteria the voice is not infrequently

completely lost as a result of paralysis of the cords. Hysterical aphonia may be recognized from the fact that it suddenly appears and disappears, and that, although the patient cannot speak, she may be able to sing or cough aloud, and will sometimes talk out in her sleep.

Gross lesions of the brain, tumors, abscesses, etc., may affect the voice when situated so as to involve the voice centres, or the origin of the vagus.

In cerebro-spinal meningitis in children, especially, a piercing screech is often uttered by the patient; the epileptic cry is also well known.

Certain chronic affections of the spinal cord may be attended with notable dysphonias. In syringomyelia, for example, hoarseness or aphonia can occur from involvement of the recurrent nerve.

In multiple sclerosis, the affection is rather of the speech (scanning speech) than of the voice, though the latter is somewhat altered.

In paralysis agitans, the voice is choppy and stammering, due to a tremor of the laryngeal organs.

Circulatory Organs.—The integrity of the vocal function depends necessarily upon the normally active circulation, and as a consequence suffers when this becomes sluggish and deficient.

Acute clinical observers claim that a valuable sign of concealed hemorrhage resides in the voice which, under this circumstance, manifests a loss in strength, volume and resonance.

It is said that in mitral insufficiency, the voice is apt to be husky, tremulous and weak; and that in aortic insufficiency, it is more likely to be high pitched, but soft in quality.

Digestive Organs.—The abdominal organs, though more distant from the seat of phonation, can exercise also some influence over this function. This is the more readily understood in the case of the stomach, which may involve the laryngeal mucous membrane by the direct propagation of a catarrhal process, or may affect the voice when over-distended by interfering with the excursion of the diaphragm. Singers generally appreciate the existence of this relationship, and are careful not to overeat, and to leave a sufficient interval between meals and vocal performances.

Hepatic lesions, as cirrhosis of the liver, are

sometimes attended with alterations of the voice. This probably occurs through the medium of impaired nutrition of the vessel walls.

In acute peritonitis, a characteristic, sharp, short, high-pitched scream is frequently heard, especially in children.

As regards the intestines, we need only to mention the groans and grunts of intestinal colic.

The Sexual Organs. That the genital organs have an especially close relationship with the organs of speech, is evidenced, in the first place, from the fact already mentioned of the change of the voice which occurs co-incidental with the sexual development peculiar to the period of puberty. At this epoch the voice undergoes a change which is the result of a physiological process affecting the larynx. The latter organ suddenly takes on a new development, increasing considerably in size and changing from its infantile type to that of the adult.

We can readily appreciate this sudden change in size and conformation which calls for an equally rapid adjustment of the muscles which regulate phonation. It is to the failure of the required adjustment that we have to attribute those peculiar and sometimes ridiculous uncertainties of the voice which we not infrequently witness at this time, as when in the same sentence the pitch suddenly changes from a bass to a treble, or *vice versa*.

In some instances the voice of the male child fails to take on the normal physiological change, the high-pitched falsetto persists. This is sometimes spoken of as the Eunochoid voice, which we may remark, parenthetically, can generally be corrected by intelligent vocal training.

The other physiological sexual processes incident to the menopause, viz., menstrual act and pregnancy, have likewise been found to be often accompanied with disturbances of the phonatory functions.

As early as 1822 Piorry called attention to the fact that certain uterine affections, as prolapse, could cause a loss of some of the best tones; again in 1894 Albespy took up the subject, reporting a number of interesting cases which illustrate such a relationship.

It is well known that female singers often suffer at the menstrual epoch an alteration in

the voice affecting its flexibility and the clearness of the high notes. In some who make a profession of singing, the deterioration may be so serious at such times that they are compelled to take account of it in making their contract for public appearances.

Much has been said as to the effect upon the voice of the removal of the genital organs; but it is our impression that the influence of such operation for evil has been greatly exaggerated. While undoubtedly there are instances in which, after an ovariectomy, the voice has suffered a notable depreciation, and has lost some in the high notes, and actually deepened perceptibly, we believe such a modification is the exception rather than the rule. It is certain that many women have continued to employ their voices as before, and some, indeed, who have reported slight improvement after such operations. The prudent gynecologist will, however, make certain reservations in his prognosis, because of the chances amounting, we would say, to about one out of ten of the unexpected happening.

The effect upon the voice of castration in the male is chiefly a matter of the age at which it is done. In the adult there will probably occur no appreciative modification. If the child, however, is emasculated anterior to the age of puberty, before the larynx has undergone the development which we have ascribed, the voice will remain high-pitched and feeble, presenting the character which has given rise to the term eunochoid voice, or the pathological falsetto.

We cannot terminate this general review of the causes of voice troubles located outside of the organs immediately connected with the production of speech, without some mention of the influence of aural disease upon this function. It will certainly be admitted without argument that sensory impulses which reach the brain by way of the ear, constitute the most important guides we possess for the appreciation of musical sounds, and unconsciously, for the execution of those few muscular movements which are called into requisition in the exercises of speech and song.

The child that is born totally deaf is also, because of this deafness, doomed to become a mute; and almost the same can be said of the child whose deafness comes on in the early pe-

riod of infancy. The faculty of speech will be compromised not only in proportion to the earliness of the inception of the deafness, but will be *ceteris paribus* parallel to the degree of the impairment.

The person who is partially deaf can but imperfectly appreciate the relative pitch, time and rythm, and therefore is greatly handicapped in the matter of good vocal execution.

The voice of a deaf individual is generally characteristic. It is monotonous, high-pitched, unmusical, and in many cases possesses, in addition, peculiarities due to associated nasal and throat trouble, a discussion of which does not come properly in this paper.

It is observed, moreover, that deaf persons are unable to judge accurately the volume or intensity necessary to the occasion, and that some speak habitually in too low a tone, while others go to the opposite extreme and speak unnecessarily loud.

A valuable diagnostic deduction of considerable value may be drawn with attention to this point, inasmuch as the loud speaking deaf persons are those whose trouble is in the labyrinth, whereas speaking habitually in a low voice is an indication that it is the middle ear which is chiefly affected.

We are conscious that in the cursory review, we have not more than touched upon some of the interesting phases of the general character of voice troubles, but we trust, at least, that it may serve to awaken some interest in the hygienic aspects of a function that is, in these modern days, very little understood by the laymen, often erroneously taught by the professional voice-trainer, and unfortunately too generally neglected by the physician.

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ARTIFICIAL FEEDING OF INFANTS.*

By G. A. STOVER, M. D., South Boston, Va.

This subject is one of the most difficult, as well as one of the most important, with which we, as physicians, have to deal. We face no greater responsibility than that of managing the diet and care of infants, and the education of mothers along these lines. It is the more difficult because it is largely an unsettled prob-

lem. The great diversity of opinions that has existed, and that now exists among investigators and pioneer workers in this field, presents a chaotic mass, out of which it is difficult to bring order. No plan nor method has been devised that will meet the demands of all cases, under all circumstances, and of which it can be said, *this is right and final*. If the history of infant feeding were written its pages would be replete with theories and methods thought, at the time of their evolution, to be correct and practicable, but destined shortly to be displaced by the next new and better one. Thus it has been that the accepted method of one year became the rejected one of the next. In this array of methods would be found simple dilution of cow's milk with water and the addition of sugar and lime water, peptonization, sterilization, Pasteurization and, finally, percentage feeding. All of these lacked something, even percentage feeding; so that we found ourselves in a position where we must depend largely upon our common-sense, and adapt our knowledge of principles and methods to each individual case as we find it.

We find that the subject naturally falls under two main divisions: First:—"*Feeding of healthy infants and those not acutely sick, but still not thriving, either on account of improper food or weakened digestive organs.*" Second. "*Infants suffering with acute illness necessitating the withdrawal of milk.*"

It is to the former class that we will devote attention, though time will not permit thoroughness in every detail.

What I say may not meet with the entire approval of the specialist or stand the scrutiny of the critic who is looking for scientific exactness. I only hope to be able to point out some principles and rules of practical value to those who have to deal with the stern reality of feeding infants under favorable as well as unfavorable circumstances—those things that, from my own observation and experience, I believe to be of the greatest help in the successful management of these cases.

Requirements of Artificial Food.

Since human milk is the standard, the most important requirements for a substitute are, first, vitality; second, it must contain the proper nutritive elements; third, it must be capable of modification so as to meet the physiologi-

*Subject for general discussion at meeting of South Piedmont Medical Society, held in Lynchburg, Va., July 21st, 1908.

cal demands of the infant. All must concede that cow's milk is the only available universal substitute, though not a perfect one. Accepting this as a fact, it is evident that the whole subject hinges on the proper understanding of and the judicious manipulation of cow's milk.

Breeds of Cows From Which the Best Quality of Milk is Obtained.

Since the composition of all cow's milk is not uniform, an important consideration is the kind of cow from which the best quality of milk can be obtained. The fat is the element to be considered. It has been shown that the milk of the Holstein, Guernsey, or the ordinary old-field cow, is the best suited; that of the Jersey is undesirable on account of the fat existing in larger globules and being encased in a tougher capsule, thus rendering it more difficult to digest. It is well to use mixed milk from a herd in order to secure uniformity of composition.

Purity of Milk

This is of the first importance. We have all experienced the difficulty of getting it clean and having it kept free from contamination. I believe that right here, more than on any other, hangs the final solution of infant feeding. The work that has been done by "Medical Milk Commissions" in New York, Baltimore, Philadelphia, Chicago, and other large, and even smaller cities, goes to prove this. The prevalence of digestive disturbances and summer diarrheas among infants has been greatly reduced by their efforts, and the mortality does not compare with what it was formerly. This has been accomplished by having a strict supervision over dairies in every detail. The milk that has been produced under their regulations is stamped as "Certified Milk," and is of known quality and purity. Some of the things most essential in securing pure milk are healthy cows, suitable pure food, sanitary surroundings, cleanliness in milking, sterilized receptacle, and last and most important of all, prompt sealing and cooling—the temperature to be kept as low as 45 to 50 degrees. It has been demonstrated that the bacteria do not multiply at this temperature. Unfortunately, we have no supply of "Certified" or sanitary milk in Virginia. Much can be done towards securing milk in private practice, if we will take pains, and can secure the co-operation of the mother or nurse. I have

been able in many cases to have the following directions carried out: Bathe the cow's udder and teats before milking, have the milker thoroughly cleanse hands, discard the first three or four streams from each teat, use a sterilized milk pail, strain through sterile strainer into sterilized bottles, seal at once and place on ice. While this does not insure purity, it helps, and is a great improvement over ordinary haphazard methods.

Modification of Milk.

A consideration of the chemistry of cow's milk shows that it contains the same elements as human milk, though in different proportions. Physiologically, it differs as to the nature of the proteids and fats—the proteids of cow's milk forming a more fibrous, tough, indigestible curd, while the fat globules are larger and more difficult of absorption. A comparison of the percentage of human milk and cow's milk, as to their nutritive values, approximately, is as follows:

Milk	Fat Per Cent.	Proteids Per Cent.	Sugar Per Cent.	Mineral Per Cent.	Water Per Cent.
Cow's	3 to 5	3 to 4	4 to 5	.75	88.85
Human	3 to 5	1.5 to 2	6 to 7	.25	88.85

Hence we see the necessity for modification of cow's milk in order to make it contain the proper proportions of these various elements. We need a diluent to reduce the percentage of proteid. We need the addition of sugar and also of fats to secure the correct percentage of these. Lime water can be added to render it alkaline in reaction. Simple dilution with water and the addition of sugar and fats, as indicated, would seem to be all that is necessary, but it is not. There are physiological differences that would remain unadjusted.

The prevailing belief among the American profession for the past few years has been that the proteid of cow's milk is the element that causes trouble in infant feeding. This belief was founded on a comparison of the physiology of digestion in different species of animals. It was shown that the addition of rennet to mare's milk produced no curd. When added to cow's milk, it produced a large, tough, fibrous curd; and when added to human milk, a flocculent curd. It was further shown that no digestion takes place in the stomach of the colt but in the intestine. In the calf, it takes place almost entirely in the stomach, while in the infant the food is digested partly in the stomach, but

mostly in the intestine. Therefore, we see that the natural food of infants and young animals is not only suited to meet their nutritive demands, but also to cause the proper development of their digestive organs. The flocculent curds of human milk resemble masticated food, and by stimulating secretions and peristalsis, prepare the stomach for solid food.

In order to make milk meet this physiological demand of the infant, it should, besides having the proper proportion of fat, proteid and carbohydrate, be diluted in a way to prevent the formation of large, tough masses or curds. The method that best corrects this, and that has given me most favorable results is "Chapin's", which is, roughly speaking, "top milk" diluted with a cereal gruel, preferably dextrinized. Dextrinized gruel can be made with barley, oat or wheat flour. Good grades of these flours are made by The Cereo Co., Tappan, N. Y. To make this gruel, take two tablespoonfuls of flour, add cold water sufficient to make a paste, then add one quart boiling water, and boil in double boiler for fifteen minutes. On removing from the fire, place the vessel in pan of cold water. When it is cool enough to taste, add one teaspoonful of diastase solution, and stir. The best preparation of diastase is the glycerite known as Cereo, and made by the above mentioned company. This thins the gruel by converting the starch into dextrin and maltose. In other words, it digests it and makes its assimilation easier for the infant; then strain, salt to taste, and cool. This gruel acts mechanically by suspending the curds in small flocculent masses, thus simulating the curd of human milk.

By "top milk," we mean the milk gotten in wide-mouth bottles and allowed to stand until the cream rises, which requires about four hours. By using a conical milk dipper, devised by Chapin, and holding one ounce, any quantity desired can be removed and added to the freshly dextrinized gruel. Then add one part of sugar to twenty or thirty parts of food, and place on ice. It is better to keep it in a number of bottles plugged with absorbent cotton, each holding the quantity desired for one feeding. Of course, strict attention should be paid to cleanliness in every detail. The amount of "top milk" used will depend on the percentage of fat desired. The fewer number of ounces removed the greater percentage of fat, and *vice versa*.

I will not attempt to give any rules for obtaining definite percentages. With the facilities that most of us have at our command, this is not practicable. However, our knowledge of the composition of milk will enable us to approximate any percentage we desire. Ordinarily, for young infants, one part of nine ounce "top milk" should be mixed with three to eight parts of gruel, and one part of sugar added to twenty to thirty parts of food. For older infants, one part 16-ounce "top milk" to one or two parts gruel, and one part of sugar to twenty or thirty parts of food. It is well to begin with a weak formula, and increase gradually. If milk disagrees, it is well sometimes to feed on gruel alone for a while, and gradually add the milk. This method may not be theoretically correct in every particular, though practically it is a good one. However, it has its limitations, and will require modification under certain circumstances. For instance, up to the fifth or sixth month, infants do not require sarchy food; hence the gruel should be very thin and weak, or even water can be used as a diluent; besides this, in using "top milk," we are in danger of feeding too great percentage of fat, and in some cases, may have to use whole or even skimmed milk. As I have said, this method is based on the theory that the proteid is the offending body in milk. More recent investigations question this, and claim that fat is the disturbing element that renders milk indigestible. Czerney and Keller have been foremost in these investigations, though their theories have been elaborated and tested by Walls & Brennaman, of Chicago. They contend that curds or clots are not formed by proteids, and the symptoms of colic have been absent from babies fed on proteid-rich, fat-free milk. Walls says, "The so-called curds in the bowel movements of infants, by which are meant the common whitish, yellowish white or yellowish lumps, are not proteid material, but are fats or fatty soaps; rarely are they inspissated mucus or clumps of bacteria. Chemical examination of these masses will reveal their nature, and clinically they can be lessened or caused to disappear from the stools, without altering the proteid contents, by diminishing or removing the fats from the milk food." These points are well taken and well maintained, and may constitute a great advance in infant feeding. It is due to the absence of

fat, no doubt, that buttermilk and whey are so valuable in digestive disturbances in babies.

This theory, while different from that on which Chapin's method is based, does not nullify that method. It does not prove that proteid of cow's milk forms no curds in the stomach. We know that curds or tough masses of some sort do form there. The fats alone evidently would not form these lumps, resembling curds, if it were not for the presence of proteids to form a kind of framework or trabeculae to hold the fat globules together. We need a certain percentage of fat in the food of a healthy infant, and the dextrinized gruel will be found useful to prevent the formation of the large lumps or fatty soaps already mentioned. I have found cereal diluted with skim milk to agree better with some babies than "top milk" and gruel, evidently due to the reduction of fat. Of course, other diluents may be used, but the addition of carbohydrate adds materially to the value of the food after the sixth month. The most important lesson to be learned from Czerney and Keller's investigations, it seems to me, is to fear proteids less, and fats more. We must remember that proteids are necessary to the development of bone and muscle, while fats produce heat and energy.

Amount of Feedings and Intervals Between Feedings

No exact amount can be designated as being suitable for every baby. A great deal will depend on the age, weight, condition of the digestive tract, and other circumstances. A good rule, cited by Brenneman, is, after the fifth or sixth month, feed one-tenth the body weight of undiluted milk, or about one and a half ounces to each pound of the body weight in twenty-four hours. The child's digestive capacity must be our main guide. We may have to alter the strength and quality of food to meet the varying conditions, until we ascertain the proper amount. This is largely true also as to the intervals between feedings. This may have to be varied to suit each case. Ordinarily, a healthy infant up to two weeks old can be fed one or two ounces every two or three hours; from one to three months, three to four ounces every three hours; from three to six months, four to six ounces every three hours, and so on, gradually increasing up to twelve or eighteen months, when eight to ten ounces may be given every

four hours. There is more danger of feeding too often than not often enough. We had better increase the amount of each feeding, if the child is not getting enough, rather than shorten the intervals, since cow's milk does not digest as quickly as mother's milk. It requires two and a half to three hours for it to leave the stomach. One of the best ways to ascertain whether or not the child is getting sufficient nourishment and at right intervals is to make frequent records of its weight, and to observe the amount of strength and vitality exhibited. If there be a natural uniform increase, we can be satisfied.

When to Allow Other Foods.

This will depend on the state of development of the digestive organs. Dentition is a good guide. At the end of the second year a healthy child usually has all of its temporary teeth, and is ready to take ordinary articles of diet in moderation. Towards the latter end of the first year, healthy infants may be allowed cereal, strained vegetable soup, crackers and other light foods. In case of delicate infants, whose digestion is weak, this period will be materially delayed. As a rule, in such cases, extra feeding should be discouraged, since the laity are naturally too prone to overtax the child's digestion with solid food.

Proprietary Foods.

They have their place in infant feeding, though, in my opinion, the only ones that can meet the demands as a continuous diet, are those that require the addition of cow's milk; in other words, those used as a diluent. Taken alone they all lack that necessary vital quality of milk, and are only of temporary use, until you can get the child back to a regular diet. "Mellins Food" belongs to this class, and is the one that I have had the most experience with, and that I generally use. It has given me uniformly good results as a diluent, though its palatability renders it useful alone in cases where, for one reason or another, the child had to be taken off of milk. This can be kept up a short time and milk gradually added to the proper amount. There are other foods, though, that have their merits, and often we have to ring all of the changes before we find something that will agree. Usually, we find that the patient will not really thrive until we get back to milk as the basis of food.

Other Considerations.

In addition to what has been said, there are other important points to be considered in feeding healthy infants, that we may keep them healthy: *First*, The danger of bacterial contamination of milk. *Second*, Overfeeding. *Third*, High relative humidity in spring and summer months.

Milk, being a good culture medium, is liable to dangerous bacterial contamination. As we have previously intimated, this is one of the great obstacles that confronts us in private practice. We are often unable to secure milk, the quality and purity of which we can absolutely rely on. There are two ways in which we may combat this condition, viz., sterilization and Pasteurization.

Sterilization of milk is accomplished by boiling for one-half hour. This is unsatisfactory, though, because it alters the taste of the milk and destroys its vitality by interfering with the natural emulsion of fats, and causing disintegration of the calcium and phosphatic salts; hence it has been practically discarded, and is only useful where sanitary surroundings are very bad.

By Pasteurization, we mean heating to a temperature of 165 to 170 degrees for a period of thirty minutes. This renders inactive most forms of bacteria. It does not produce the change in taste that boiling does, though it has practically the same devitalizing effects. It is claimed by Dr. Sill, of New York, that continuous feeding on sterilized or Pasteurized milk, will result in scurvy or rickets. However, during the heated season, when our milk supply is of doubtful purity and freshness, Pasteurization is the less of the two evils, and should be practiced. This can be done in any family of average intelligence. No special outfit is necessary. After preparing the food, pour it into sterilized bottles or jars and place in ordinary pot or kettle of water. Heat to the desired temperature, 165 to 170 degrees, for thirty minutes; then remove and place on ice. This should not be persisted in for too long a period, but, as soon as circumstances will permit, the child should be put back on raw milk.

Overfeeding.

This is a danger to be most carefully avoided. Unless we use intelligent care, we are liable to err in this regard and produce disastrous re-

sults. Brenneman concludes, after an able discussion of this subject, that, "Overfeeding is so prevalent in this country that it is the rule, that it is second to no other factor in the pathogenesis of infant feeding; that the disturbing element in overfeeding with cow's milk is the fat; that fat in excessive amounts regularly produces constipation; proteids never do so; and that it is never necessary to give more fats than preteids." Overfeeding is evidenced by fretfulness, indigestion, the child becomes pale and weak. The weight remains stationary or decreases. The abdomen becomes large and tympanitic. The stools are characteristic, being pale, putty-colored, friable masses; they do not adhere to, nor stain the napkin. That fat is the cause of this condition can be proven by reducing the amount of fat, or feeding on skimmed milk, when the stools will change to a light brown color, of a pasty consistency, the other symptoms also gradually disappearing.

Care to avoid overfeeding is made more necessary when we consider the effects of

High Relative Humidity in Spring and Summer Months.

It is a notable fact that, as a rule, we have no difficulty in feeding infants in winter, but, with the coming of spring and early summer, trouble begins. There is a reason for this, and it lies in the fact that at this season we often have a condition of high temperature with high humidity. Heat is largely eliminated by evaporation of sweat from the surface of the body. With the high relative humidity it is evident that heat elimination will be greatly retarded, the air being more or less saturated with moisture, rendering evaporation slow. If, under these conditions, we continue to feed an infant the same amount of heat-producing food as was required during cooler weather, we will have an over-production of heat and retention of the same in the body. This, in turn, would result, in all probability, in prostration and excessive germ development in the intestinal tract, and an acute milk infection, with all its attendant horrors. The practical lesson we learn from this is, to reduce the amount of food during this season of the year, especially the fat, which is the heat-producing element. Dilute the food about one-half, and instruct the nurse or mother to always stop the feeding a little short of complete gratification, since a slightly hungry child

is more apt to remain a well child. If we will take the time and care to instruct mothers as to these points, doubtless we can, in a large number of cases, prevent an acute illness.

Finally, we may say that to insure reasonable success in feeding infants artificially, we must pay strict attention to our milk supply, and see that it is of the proper quality, fresh and clean. We must be familiar with the composition of milk, and the different methods of modification to secure, at least approximately, the percentages we desire. When in doubt as to cleanliness of food, Pasteurization should be practiced in warm weather. The dangers of overfeeding and too high percentages of fat should be carefully guarded against. We must study the needs of each case as we find it. Empiricism has no place in infant feeding. Our only hope of success lies in the mastery of the principles involved; then the careful application of these principles in every detail.

TREATMENT OF SUMMER DIARRHEA IN INFANTS.*

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I take it that it was the intention of the Committee on Program that I should discuss the treatment of the infectious diarrheas of infants which prevail during the summer months, irrespective of whether they belong to that class in which there are symptoms of intoxication of varying intensity, with little or no evidence of pathological change, or to that class in which the symptoms indicative of decided pathological lesions predominate over all others. I will follow the plan of the leading text-books and present separately the *prophylactic* and *hygienic*, *dietetic*, *medicinal* and *local* measures of treatment.

Prophylaxis consists principally in a campaign of education which has for its object the education of the public in four fundamentals: (1) That all communities should enact and enforce laws providing for cleanliness in the production and handling of milk, and making it compulsory that all milk should be immediately cooled to 50 degrees F., or below, and kept so until delivered to the customer. (2) That the

consumer should make every effort to keep the milk clean and cold in the home. (3) That the power of resistance of infants is impaired by improper feeding, whether improper on account of irregularity or carelessness, or on account of the use of foods which overtax the digestive organs, or do not supply sufficient nourishment for the growing child. (4) That to all children strong enough to maintain normal temperature, the use of blankets and unnecessary flannels during the summer months is irksome, and consequently detrimental to health. Therefore, these articles should be dispensed with at this time, and every effort made to keep the children as cool as possible.

I am unable to appreciate the wisdom of sending infants from the comforts of home to cramped, uncomfortable quarters in the country with the idea of preventing diarrhea; and particularly so when at home they are able to secure an abundance of clean milk, produced under the surveillance of the health authorities; while in the country a smile of derision is oft-times the reward for any suggestion that milk could possibly be a cause of disease.

For delicate infants more benefit is to be expected from a change of scene and climate than for those of maturer years. But so long as the average farmer does not seem to realize what constitutes dirty milk, and the part played by it as a cause of illness among infants, I do not think we are justified in indiscriminately ordering delicate infants to the country without first receiving assurance that more than ordinary care is to be taken in milking and in the handling of the milk.

The *hygienic* treatment consists in the use of a daily sanitary bath, and of measures to keep the patient as cool and as comfortable as possible; an abundance of fresh air; the frequent disinfection of the attendant's hands to prevent reinfection; and the prompt disinfection of soiled napkins, etc.

In the *dietetic* treatment, the authorities are unanimous in advising that with the first symptoms all food containing milk be withdrawn, and in its place plain water, albumin water or barley water be substituted.

Here arises one of the most important questions in our treatment, which is, how long should these rest foods be continued? In the

*Read before the Richmond Academy of Medicine and Surgery, July 22, 1908.

breast fed, our authorities advise that the infant be put to the breast in twenty-four or thirty-six hours; while in the bottle-fed, who are less liable to stand a long continued withdrawal of nourishment, we are told to withhold all milk until the stools approach normal in color, consistency and frequency, owing to the danger of reinfection from the bacteria present in the intestinal tract, which finds in milk an excellent culture medium; but they fail to tell us why cow's milk, properly modified, acts as a better culture medium in the intestinal tract than woman's milk.

While I am not to be understood as proposing to irritate an already irritated, if not inflamed, gut with the tough curd of cow's milk I do think we should constantly bear in mind the far-reaching effect of the rapid wasting resulting from the depleting diarrhea and continued high temperature, and endeavor to combat it as soon as possible, by the administration of food of the highest nutritive value compatible with the capacity of the crippled digestive organs.

With this end in view my routine plan is to use barley water or albumin water for three days, varying from one to the other according to the condition of the stools; for instance, if they are offensive, indicating proteid decomposition, barley water is used; if they are sour and excoriate the buttocks owing to acidity resulting from carbohydrate fermentation, albumin water is given.

On the fourth day, the use of whey, to which milk sugar has been added in the proportion of one-half teaspoonful to an ounce, is begun. For a day or two this is given at every other feeding, after which the albumin water or barley water is withdrawn entirely. If the milk from which it is prepared comes from a suspicious source, the whey should be sterilized. If the stools show lumps of fat, which dissolve on the addition of ether, the whey is made from skim-milk. If the stools show curds or lumps on which the ether has no effect, the whey is peptonized.

With evidence of improvement in the digestion, peptonized skim-milk, to which milk-sugar is added, in the proportion of one-half teaspoonful to the ounce, is given in place of the whey. The use of skim-milk for peptonization is par-

ticularly emphasized, inasmuch as this process has no effect on fat, and as the presence of the fat interferes with the gastric digestion on which we have to depend while the intestinal tract is the seat of disease. With continued improvement, peptonized whole milk is gradually substituted and the degree of peptonization gradually reduced. The peptonizing tubes carried in stock by all druggists are to be used for peptonization of whey or skim-milk; and the process is the same as for the peptonization of whole milk, with the exception that no water is added.

The interval between feedings is never less than three hours; the amount of each feeding is not more than two-thirds of the quantity given when in health, and the degree of dilution is greater than for well infants of corresponding age. Between the feedings, water is frequently administered.

By following this plan, milk mixtures sufficiently strong to meet the demands of the patient can be safely given far sooner than if we follow closely the writings of the authorities, with the result that the convalescence will be hastened and the dangers of malnutrition and marasmus lessened.

In our *medical treatment* the remedies of most value are calomel, castor oil, bismuth, opium and alcohol. If there is a tendency to nausea or vomiting, it is well to begin treatment by washing out the stomach, and then administering one or two grains of calomel which is to be followed in six hours by one or two drachms of castor oil. If, on the other hand, there is no irritability of the stomach, the dose of oil should be administered immediately, to be followed in an hour or two by a dose of calomel which is followed in six hours by a second dose of oil. In this way, the evacuation of the bowels is hastened and the efficiency of the calomel increased.

I do not believe that there is any plan more universally followed by physicians than the administration of the initial dose of calomel and castor oil in these cases, but, unfortunately, a large number fail to recognize the indications for a repetition of them. These indications are manifested by a continuation or recurrence of offensive stools; or by evidence of inactivity of the small bowel with retention and decomposi-

tion of its contents, followed by absorption and the resulting symptoms of intoxication, such as increasing or continued high temperature and nervous symptoms which often simulate those of meningitis; the absence of bismuth in the stools when this drug has been administered; or the presence of abdominal distension which is not relieved by irrigation of the colon, are often the first signs of this intestinal inactivity. I am convinced that calomel or castor oil will render us far greater service in this condition than any other drug or combination of drugs, provided they are given sufficiently and repeated often enough.

Of the drugs administered with the view of reducing the number of stools, bismuth subnitrate takes the lead. Its value is due to the fact that it possesses astringent, sedative and antiseptic properties. But to be of service, it has to be given in doses of sufficient size—never less than ten grains every three hours to the youngest infant. The size of the dose is best regulated by our ability to give it. At present, I am prescribing it in powders and directing the nurse to mix it with a small quantity of water in a teaspoon, from which it is pushed into the child's mouth by means of the finger, rather than trying to suspend it in vehicles which are most efficient in distressing the stomach.

In those cases accompanied by large fluid stools, two to four drachms of bismuth may be suspended in from two to four ounces of thin starch water and injected into the colon immediately after irrigation.

The *contraindications* to the use of opium are: It should not be given before the intestines have been emptied by means of purgation and colonic irrigation; it should not be given when the number of stools is small, i. e., four or five in twenty-four hours; it should not be given when cerebral symptoms and high temperature exist with scanty stools. The *indications* for its use are to relieve pain and check excessive peristalsis. It is particularly valuable when there are large fluid stools attended by symptoms of collapse, as in the severe forms of intoxication commonly known as cholera infantum; and during convalescence, when with little if any fever, there is a continuance of the intestinal irritability resulting in the stimula-

tion of peristalsis and a consequent stool whenever anything is put in the stomach.

Regarding its administration, it should never enter into a composite prescription for the reason that it is often desirable to increase or decrease the size of the dose, or withdraw it entirely, without interfering with the other medication. Enough should be given to produce the desired effect; the interval between the doses should not be too short; and it should be discontinued as soon as possible. The preparation should vary with the indications, as when there is pain throughout the abdomen with frequent stools of some consistency, paregoric in doses of from five to twenty drops is to be used; when the pain is due to rectal tenesmus, the best result is to be obtained from the use of the old laudanum and starch water enema, made by adding from two to four drops of laudanum to an ounce of starch water. When the stools are frequent, large and fluid, associated with symptoms of collapse, as seen in the severe forms of intoxication, morphine, in doses varying from one one-hundredth to one-sixtieth of a grain, should be administered subcutaneously. In those cases in which excessively frequent large, fluid stools are associated with high temperature and severe nervous symptoms, there should be no hesitancy in administering morphine hypodermatically, provided a sufficient dose of castor oil is given at the same time.

In many mild cases, there is no need for the use of stimulants, but in all cases of long duration, they will be necessary. Under these circumstances alcohol is to be preferred. The indications for its use are cold extremities, weak pulse and other evidences of prostration. Of the alcohols, brandy is the most serviceable, four to six drachms being administered to a child one year of age during twenty-four hours. The quantity to be used during the day had better be diluted with from six to eight parts of water, and small quantities of this given at short intervals. In cases of severe intoxication, or when there is sudden depression, brandy should be administered subcutaneously. If an effort is being made to nourish by means of the alcoholic solution of predigested foods, brandy should not be administered as, in all probability, the patient is already receiving more alcohol than is good for him.

Of *local measures*, the most important are irrigation of the stomach and irrigation of the colon.

Irrigation of the stomach is particularly serviceable in those cases which are ushered in by violent and persistent vomiting. It is easily accomplished, the apparatus necessary being a small catheter which is connected with a funnel by means of a rubber tube about two feet in length. The catheter is introduced through the nose into the stomach. The normal saline solution is used, the washing being repeated until the solution returns perfectly clear.

The importance of irrigation of the colon is second only to the administration of calomel. By it, any residue of feces or irritating secretions which may have remained in the lower bowels or rectum is removed; and as it stimulates peristalsis, it favors the evacuation of the small bowel. It also stimulates the heart's action and adds to the body an amount of fluid to compensate for the drain resulting from the diarrhea; and it has a soothing effect which is far greater than that following any justifiable medication.

It is indicated in all cases of diarrheal disease. In the milder cases it may not be necessary to repeat it, but in the severe cases it is to be used once a day, if not oftener, until convalescence is well established. When properly done, the effect is often sensational, but disappointment will certainly follow carelessness. For the best results, the physician must personally attend to the irrigation unless he has the assistance of an exceptionally skilful nurse who recognizes when the tube has *not* passed into the colon. Owing to the difficulty of procuring small rectal tubes, a catheter can be substituted. This should be of sufficient calibre and stiffness to prevent it from kinking. The child should be placed on its back with the buttocks slightly elevated, with the reservoir containing the solution, not more than two feet higher than its body. The tip of the catheter is introduced; enough of the fluid to cause the rectum to empty itself is allowed to run; then with the solution flowing to open the way for it, the catheter is slowly passed into the colon, or for a distance of twelve inches—care being taken that it does not double up on itself. The irrigation should be continuous until the rectum flow escaping along the side of the catheter is perfectly clear.

Two quarts are usually sufficient, but it may be necessary to use as many gallons.

There are three questions frequently asked concerning the use of colonic irrigation, which are: (1) Should it be used when there is much mucus and blood in the stools? (2) Should it be used when there is much fluid in the stools? (3) What are the contra-indications to its use?

If the condition is acute and the stools contain mucus and blood, irrigate, for the reason that retention and decomposition of the mucus and blood irritate the bowel, keep up tenesmus and retard recovery. In this condition, the irrigation should be followed by injecting into the rectum an ounce of starch water containing from two to four drops of laudanum. If acute symptoms have subsided, irrigation should not be used oftener than twice a week, inasmuch as it has a tendency to encourage the production of mucus.

If the stools contain much fluid, irrigate, for the reason that this fluid in the colon irritates the mucous membrane and produces marked pathological lesions similar to those which separate cases of ilio-colitis from intestinal intoxication; and also for the reason that irrigation supplies fluid to overcome the depleting effect of these watery stools. So long as there is much fluid, irrigation should be used twice a day; and after the solution has returned, it is beneficial to inject two to four drachms of bismuth suspended in two to four ounces of starch water.

The only contraindication to the use of irrigation is the inability to secure the necessary apparatus.

I have irrigated a large number of cases, and so far, have never had occasion to regret it, though frequently the patients were so ill that I considered it the part of prudence to inform the parents that death might occur during the treatment. In all of my cases improvement has followed; but, of course, in some this was only temporary.

In choosing a solution, the normal saline offers the greatest service during the acute stages. If after the acute symptoms have subsided mucus persists, this should give place to a solution of tannic acid in the proportion of one drachm to the pint.

The temperature of the solution varies with

the patient's condition. Ordinarily, it should be about 100 degrees F.; if there is subnormal temperature, it should be about 110 F.; if there is much fever, it may be as low as 80 degrees F., or lower.

The other local measures of treatment are the application of heat and counter-irritation to the abdomen for their soothing effect; the use of cold for its antipyretic effect; and the application of heat or mustard when there is depression of the vital forces; but the indications for their use and the results to be expected are similar to those under other circumstances.

A PLEA FOR A MORE EXACT THERAPY.*

By A. F. KERR, M. D., Greensville, Va.

A decision as to the subject of this paper was reached only after reading an article in a secular journal entitled "Valueless Drugs," which was written by a physician, and originally published in a medical journal, and copied in the secular paper. It showed that the laity is becoming interested in medical matters. It occurred to me, that if the laity was interesting itself in the quality of drugs, it was a good subject for discussion by the medical profession. Hence, the subject of my paper.

The aim of the honest, conscientious physician is to cure disease, or to assist nature in her efforts to correct all departures from the normal physical standard; to do the best possible thing for his patient in the best possible way, by the most approved methods. Hence, he prescribes the best known remedies, and demands of his druggist that his prescriptions be filled as he directs; or, if he dispenses, he demands of the manufacturer that his drugs be up to the required standard of purity. But when he prescribes the galenicals, such as fluid extracts, tinctures, elixirs, etc., however honest the druggist or manufacturer may be, he is never sure that his patient gets the correct quantity of active agent that should be, and he expects to be, in the remedies prescribed. He is positive in his diagnosis, and the correctness of his plan of treatment, and expects favorable results, and knows he should have the expected results; but he is disappointed, his patient goes on from bad to worse, and unless nature and the vital powers of his patient come

to his relief, joins the great majority. The doctor is disappointed and chagrined, the undertaker covers up, and the stone-cutter erects a manument to what the public calls "the doctor's mistake." The doctor loses faith in drugs, and ultimately joins the great army of Nihilists and Oslerites, to be found in the medical profession of to-day. His patients go to the seashore, or to the mountain resorts, or to the Continent, perhaps to the surgeon's table, and the physician loses the fees that are legitimately his, and under other conditions would be his.

What is the cause of this lack of faith in drugs, and the growth of nihilistic tendencies?

It is because of the variableness in the potency of the remedies prescribed, the variation of the active principle upon which depend the desired effect. Take, for example, tincture of opium, which contains some eighteen or twenty different alkaloids. How is the physician to know how much morphine his patient is getting, or what percentage of apomorphine, or codeine or heroin? Take digitalis. When he prescribes the tincture, how is he to know whether he is getting the required percentage of digitalin, the heart tonic, or digitonin, the diuretic properties of the crude drug? And so we might go through the whole list of fluid extracts and tinctures. It is true, many of these drugs are assayed, but only for one of the many active principles they contain, and we never know how much of the other active principles they do contain. Besides, the assayed drugs vary by the effect of age in the quantities of the active principles. I will mention a few of the most generally used drugs taken from a list of twenty assayed by Mr. Sharpe, of the firm of Sharpe & Dohme, for the years 1899 to 1905, giving the percentage of active principle, and showing the variation in quantity for these years:

DRUGS.	1899.	1903.	1901.	1902.	1908.	1904.	1905.
Digitalis	0.288	0.280	0.255	0.275	0.23	0.3	0.3
Bellad. Rt.	.....	0.63	0.68	0.5	0.59	0.56	0.54
Ergot	0.24	0.24	0.26	0.20	0.25	0.32	0.12
Aconite	0.55	0.62	....	0.92	0.53	0.75	0.75

From another source, opium was found to vary from 2.7 to 22.8 per cent. of morphine.

A pharmacist while doing work in the pharmaceutical department of the Detroit Medical College, bought ten samples of tincture of opium in the open market, not one of which reached the required standard of the U. S. P.,

*Read before the Augusta County, Va., Medical Society, May 1908.

which should assay one and three-tenths to one and five-tenths of crystallized morphine to 100 c. c. of the tincture. Dr. Joseph D. Bryant, president of A. M. A., at its meeting, June last, has this to say in his address: "That the crude drugs and standard preparations approved by the U. S. P., and prepared and exploited by reputable druggists should in all instances, be found trustworthy, admits of no denial."

He further says in illustrating the work of the New York City Board of Health: "It is a matter of general knowledge that aconite is a drug of potent nature, and in comparatively common use. Of this drug, five of the thirteen samples analyzed were of the tincture and fluid extract of the root. Of the three specimens of the tincture, one had nine per cent. more, and of the remaining two, six and twenty per cent., respectively, less of aconitine than the standard requires. The two samples of extract of the root had 18.5 and 25.5, respectively, more aconitine than is required.

The samples of belladonna showed, respectively, from thirty-five to forty-five per cent. less of mydriatic alkaloids in the powdered extract of the leaves, 11.5 per cent. less in the fluid extracts of the root, 17 per cent. more in the tincture of the leaves, and 47.5 per cent. in the fluid extract of the leaves than is required by the U. S. P.

Powdered *nux vomica* was found to be comparatively worthless, but in the tincture and fluid extracts were revealed an excess of strychnine, above the required standard of 19 and 17 per cent., respectively! In tincture opium, was found, 7 to 13 per cent. more of morphine than the accepted standard of composition.

We might pursue this line of investigation indefinitely, but the limits of this paper will not permit, and the above must suffice.

Is it any wonder that we lose faith in drugs, when they vary in potency so enormously? To obtain any reasonable uniformity we must add adkaloid, if too weak, and dilute if too strong.

And now, what is the remedy—what shall we substitute for the uncertain, variable in active principle, galenics? The answer is: use the active principles of the drugs we are accustomed to prescribe. We use daily, morphine, codein, heroin, atropine, quinine and strychnine; and why not include also, aconitine, digi-

taline, ergotin, arbutin, emetin, hyoseyamine, pilocarpine, quassin, veratrine, and so on through the whole list of alkaloids?

Following are some of the reasons for preferring them to the crude drugs or fluid extracts and tinctures.

First. These agents have been studied, and their properties determined with a precision impossible with the older drugs, because we know, to start with just what they will do. The potency of a drug is based upon the amount of active principle it contains; and if this be true, why not eliminate all extraneous matter, such as woody fibre, alcohol, water and all inert matter, and other active principles not wanted, and which may be antagonistic to those for which we prescribe the drug, and use the remedy in its purity? Then, we have certainty of action, and are sure of results. We know, too, just what a given quantity will do, and how much of the drug will produce the desired result. Next to certainty of action is the rapidity with which it gets in its work. The pure alkaloid is so quickly dissolved and absorbed that we get results much sooner, and we do not have to wait until the active part of the drug is dissolved out of the mass of extraneous matter to be found in the crude drug.

Another consideration in favor of the alkaloid is the smallness of the dose, and absence of disagreeable taste; besides, it may be used hypodermically. A sugar-coated granule, the size of a pinhead is much easier swallowed than a teaspoonful of a bitter, nasty, nauseating dose of fluid extracts or tinctures, which we administer *ad nauseam* just to get into the patient's stomach perhaps one sixtieth grain of active principle.

Then again, alkaloids are easy of administration, and may be given singly or in almost any combination with synergists. A number four capsule will hold from four to six granules, or they may be given in solution; the required number of granules wanted for a dose may be readily dissolved in a teaspoonful of water, or the required number of doses may be dissolved in this way: A granule each of saccharin to sweeten and carmine to color may be added.

Another consideration of enormous advantage to the dispensing physician is the portability and economy of space, as compared with

liquids or powders. A twenty-four vial case holding from 100 to 300 granules each, is easily carried in the side pocket and scarcely noticed, and yet you have something at hand to meet almost any emergency case—something dependable “Arms of Precision.” The prescribing doctor, too, will find something like this a great advantage in his daily rounds. A case containing from 6 to 112 vials, with a pocket for dispensing envelopes and labels, and costing from fifty cents to five dollars, will meet the wants of the granule doctor.

The question of cost is to be considered also. I have not taken the trouble to make a comparison of the relative cost of the granule and the commonly used drugs, and therefore, am not in position to say which is the cheaper; but the granule varies in cost from fifty cents to ten dollars per thousand; the more commonly used will not exceed \$1 a thousand.

There are many other reasons why the alkaloids should be preferred, but to enumerate them would require more time than I am expected to consume in this paper. I shall mention but one other, and it is that it makes us better diagnosticians and better therapists. We must know what is the matter with our patient, and we must know drug action so as to administer just the remedy needed to meet the indication present.

I wish to say in conclusion, that I do not want to be understood as being exclusively an alkaloidal doctor, for, of all the drugs I use, perhaps not more than half are alkaloids; but where the active principle is brought into comparison with the crude drug I greatly prefer the alkaloids, and use them, and am confident that others will use them, if they will but try them.

ILEUS.

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Ileus is a general term used to denote a complete or partial occlusion of any portion of the intestinal canal, caused by a strangulation (invagination), twisting or knotting (volvulus), strictures, tumors, fecal impaction, concretions, or foreign bodies.

The particular form of ileus to which I wish to direct your attention is *intussusception* or *invagination*. This form occurs most frequent-

ly in children from two months to ten years of age—statistics showing that 50 per cent. of cases are seen during this period of life. The cause of its frequency in childhood is the various enteric troubles which they suffer, poor development of the coats of the intestines, and the large size and great mobility of the cecum. According to Nothnagle, the condition is produced by irregular peristalsis—the longitudinal muscular fibres contracting more than the circular, drawing in the gut downward, causing an over-riding of the lower segment upon the upper. External causes are blows upon the abdomen, violent muscular exertion, sudden and repeated jars of the body, and particularly the violent jolting to which infants are subjected to quiet or amuse them.

Diagnosis.—The question of diagnosis is interesting from a surgical standpoint, not only because surgery offers practically the only method of saving the patient, but in order that surgical intervention may be successful, we must make an early diagnosis. As a rule the surgeon is called on only after the ineffectual use of the various purgatives, enemata and poultices, and when the patient is practically moribund. Too much reliance is placed on the classical symptoms, as laid down in the text-books; vomiting, (becoming stercoraceous), distended abdomen, and the presence of a palpable tumor. I wish to lay special stress on the fact that during the stage of the trouble when surgery is most effectual in relieving the condition and saving the patient, these symptoms are absent. The merest tyro can diagnose the condition after the onset of these symptoms, but then the patient is doomed—98 per cent. dying regardless of treatment; but although the case may seem hopeless at this stage, they should have the chance that only surgery can give them. My plea is for a better understanding of the condition, closer attention to the earlier symptoms, a careful watch over all enteric disturbances in children, and prompt surgical intervention in every case before the gut becomes gangrenous necessitating extensive resection and death from shock.

Let us take a supposititious case: You are called to a child four to eight years of age, and the mother informs you that two or three hours before, the child complained of violent pain in the abdomen. There is slight nausea, but no

actual vomiting. The temperature is normal but the pulse is about 90. On examination the abdomen is found flat and rigid, tender on pressure, but the tenderness is diffuse. There is some tenesmus and the patient is restless. Note the expression. It is anxious and pinched, denoting a more serious trouble than a simple enteritis. The facial expression is one of the most important symptoms. I believe too little attention is paid to the expression in all intra-peritoneal troubles. To me the careful scrutiny and reading of the faces of patients were the secret of the wonderful diagnostic powers exhibited by my late and lamented tutor, Dr. Hunter McGuire. An enema is given the child, but only a small quantity of hard scybalous feces are passed, to be followed by a small amount of mucus, streaked with blood. On making pressure over the abdomen, you find that the pain is not relieved, as it would be in colic or simple enteritis. On repeating the enema the water is returned accompanied only by more mucus and blood. The tenesmus becomes worse and the quantity of blood from the bowels increases; and with these symptoms, tenesmus, bloody stools, colicky pains unrelieved by pressure, normal temperature, and a pulse which has increased from 90 to 110, facial expression pinched and anxious, we have a picture which cannot be misinterpreted by any careful observer.

What shall be done? Shall we try further to force an action from the bowels by purgatives and enemata, or wait and see if nature is coming to our rescue? Or shall we open the abdomen and relieve the obstruction? Enemata have been unsuccessful, purgatives only make matters worse; old mother nature pulls us out of many a hard place, but seldom does so in these cases, and it is criminal to postpone operation. Open the abdomen at once. Don't be satisfied with finding one invagination, but hunt the entire tract over. I have discovered as many as four other invaginations after my assistant had urged closure of the abdomen. The secret of success in these cases is an early diagnosis, but of equal importance is rapid work. Get in the belly and out of it as quickly as is consistent to do good work. In early cases, where the gut is still sound, reduce the invagination, shorten the mesentery, or stitch the invaginated portion of gut to a healthy piece

lying close to it, and close the abdomen; this can be done in fifteen minutes. Where the gut is gangrenous, but the patient is in good condition, a resection can be done in a half to three-quarters of an hour. If the patient is in a bad way, shocked, has high and weak pulse do an enterostomy or a colostomy, depending on the location of the invagination, and tide the patient over the acute stage, and do the radical operation later. Always bear in mind that children stand surgery badly, and that rapid work is essential to success.

In conclusion I wish to call your attention to the marked advance in the treatment of intestinal obstruction in the last thirty or forty years, which advance has been largely due to the efforts of American surgeons. In the London *Lancet*, published in 1845 I find the following case of Ileus, reported by one J. Berncastle, Esq., M. R. C. P., of London. The article is entitled "A Case of Ileus caused by an abnormal malformation of the small intestines, producing fatal strangulation and death."

Wm. H.; aged 12; a boy of strumous diathesis, but otherwise healthy, was on Sunday, soon after a wrestling match, taken with a pain in the stomach. The parents thought he had strained himself. I was applied to and sent him a concoction, the symptoms being those of plain bellyache. I saw him on the following Tuesday. The disease had taken a more serious aspect; the temperature was normal, pulse 100, feeble and thready, countenance anxious and pallid, some pain, and rejecting everything taken. The bowels were confined, he having no evacuation since Sunday, except a little mucus, stained with blood. Six leeches were ordered to abdomen, followed by hot fomentations and a warm bran poultice, so that a large quantity of blood was obtained after they had fallen off. He took two ounces of castor oil which was immediately rejected. Enemata of castor oil brought away a small quantity of bloody mucus. Sickness continued unabated; ordered calomel, gr. 1, opium, gr. one-fourth, to be repeated every 3 hours.

"Wednesday, 10th. Medicines had not stopped the sickness; nothing was retained on the stomach. Vomitus contained a yellow bilious liquid, mixed with the various medicines taken. Medicines ordered continued. Five leeches ordered to abdomen, castor oil enemata every three

hours; no effect. At this stage diagnosis of enteritis, with possible intussusception was clearly made out. Several other purgatives were tried but were immediately brought up. It seemed useless to seek for relief from internal exhibition of drugs; the strong mercurial ointment was directed to be rubbed in the thighs three times daily. A large blister was applied to the abdomen, which rose satisfactorily. Vomiting, which had been of a bilious character, has become fecal. Pulse barely perceptible, abdomen tympanitic.

"Thursday, 11th. Had restless night. Delirious, and abdomen increased amazingly in size; lower extremity covered with purpuric spots. Mercurial ointment applied to blistered surface of abdomen t. i. d., and enemata continued.

"Friday, 12th. Restless night. Gave calomel gr. 4 scammony gr. 10, to be repeated every 4 hours. This being brought up at once, croton oil was given; no results. The disease had evidently become, since the last two days, '*nulla medicabilis herba*,' and no hope whatever was for a moment entertained of affording even temporary relief. There was suppression of urine.

"Saturday, 13th. Six drops of croton oil were rubbed in over the blistered surface of abdomen merely as a '*dernier resort*.' Patient died at 5 P. M..

A post mortem was allowed and revealed the following "*lusus naturae*," which I believe perhaps unique in the records of medicine. On making inspection of abdomen, a tight cord was found passing backward, which had entangled the small bowels binding them down like a ligature. On further examination, this proved to be a pervious cord, with the same structure as the intestines and springing from the junction of the jejunum and ileum. It was filled with the same contents as the ileum, and could by pressure be emptied into that gut. The gut was gangrenous. The cause of death being so evident, no further examination was made.

DERMOID CYST REMOVED WITHOUT INTERRUPTING PREGNANCY.

By W. A. STROTHER, M. D., Bedford City, Va.

Patient B., a well-nourished and robust female; white; age 34; married; 2-para; children aged 20 months and three years; both la-

bors normal, and of short duration. Perineal lacerations slight. Two small cervical tears. Family history negative. No history of specific disease.

April 21, 1908, patient had a miscarriage (6 weeks' pregnancy. As the membranes came away complete, and there was no rise of temperature, curettment was not done, and patient seemed entirely well in ten days.

Patient is now pregnant again; not having menstruated since the miscarriage, and dates her pregnancy from May 1.

On July 20th, just three months after the miscarriage, the patient suffered pain in the right iliac region and feared another miscarriage. The pain was promptly relieved by enema, which produced large bowel action. On examination no signs of threatened abortion were found, but a tumor, the size of a large man's fist was found in the right iliac region.

The tumor felt smooth, spherical and slightly resilient and was freely movable; in fact, it could be moved to any part of the abdominal cavity without pain or traction.

Of course, on first discovery of the tumor, the possibility of ectopic gestation suggested itself, but was promptly dismissed on account of the extreme mobility of the tumor.

Next, a movable kidney was thought of, but as there were no urinary symptoms, no Dietl's crisis, and from the fact that the tumor could be carried over and pushed down into the left iliac fossa without pain or traction, this diagnosis was dismissed.

The ureters were not catheterized on account of the danger of abortion.

The next possible diagnosis was fecal impaction in the cecum, but this diagnosis was given up after several days of free catharsis, with no change in size or shape of tumor. The resiliency of the tumor also contradicted the diagnosis of fecal impaction, as fecal tumors always feel either hard or doughy.

After eliminating the three above possibilities, the next most probable things in the order of their frequency were ovarian cyst and tumor of the omentum.

Here the difficulty of making a positive diagnosis was practically insurmountable. Of course, ovarian cyst is the more common of the two, and would be given careful consideration, but here we were confronted by the fact that

several important symptoms of ovarian cyst were absent, viz., reflex pain in the breast or head, bearing-down and dragging sensation, and oedema of the legs, vulva or vagina from pressure on the iliac vein.

Besides the absence of these symptoms, the fact that the tumor did not increase in size in over a month's time; and the free mobility, confined seemingly only by the abdominal walls, seemed to furnish evidence against its being an ovarian cyst.

The literature on omental tumors is very meagre, and amounts to the following: "Tumors of the omentum are generally freely movable (except when very large), are painless, and occasionally constitute the contents of hernial sacs."

This description coincided as to painlessness, with the symptoms presented by the above case, but this was not considered enough to justify making a positive diagnosis of tumor of the omentum; consequently the case came to operation with a diagnosis of "ovarian cyst, or omental tumor."

Operation revealed a dermoid cyst of the right ovary.

The cyst was five inches in diameter, weighed twenty ounces, was unilocular, and contained a semi-fluid mass of sebaceous substance and a quantity of loose hair; also a wart attached to the wall of the cyst with a bunch of hair about two inches long growing from it. (The hair in the cyst was black, while the hair on the patient's head is brown).

There were no adhesions nor complications, and the other ovary was normal.

Pregnancy was not interfered with by the operation, and the patient made an uneventful recovery.

The above case occurred in my practice, and was operated on by Dr. A. W. Terrill, of Lynchburg.

111 N. Bridge St.

Book Notices.

Text-Book of Surgical Anatomy. By WILLIAM FRANCIS CAMPBELL, M. D., Professor of Anatomy, Long Island College Hospital, etc. With 319 Original Illustrations. Philadelphia and London. W. B. Saunders Co. 1908. 8vo. 675 pages. Cloth,

and be able to detect parts and structures as he cuts. He must know what is just under or beyond his incisions, and recognize the relations of organs or tissues to the part on which he is operating. This book instructs as far as text and pictures can do, all the essential anatomical facts connected with injuries or surgical diseases. It will prove of special interest to surgeons to examine this book before undertaking operations about parts or organs whose regional anatomy is not clearly in mind. Besides the text descriptions and the excellent original illustrations, nearly every chapter contains some useful surgical suggestion. It is an exceedingly valuable book for the purposes told in the title.

Adenomyoma of the Uterus. By THOMAS STEPHEN CULLEN, M. D., Associate Professor of Gynecology, Johns Hopkins' University, etc. Illustrated by Hermann Becker and August Horn. Philadelphia and London. W. B. Saunders Co. 1908. Large 8vo. 270 pages. Cloth, \$5 net; half Morocco, \$6.50 net.

We cannot appreciate the reasons for the adoption of the unwieldy size of page, and for the very extra large type used in the text of this book. Had ordinary book type and leading been used, the book would have been scarcely more than half its present size, the expense of publication less, etc.

But there can be no question as to the merits of the work, based practically upon ninety cases of adenomyoma occurring in Johns Hopkins' and other Baltimore hospitals. As the name, adenomyomata implies, these growths consist of gland elements and myomatous tissue. The cases noted by the author are very generally given in detail, the operations for their removal described, etc. Carcinomatous complications in some of the cases are noted. This is, in effect, a technical book for the gynecological surgeon and pathologist, and will prove of great value to him in any suspected case. Like so much of surgical diagnosis, diagnosis is generally made after the operation, though some pertinent suggestive points are given in the chapter on differential diagnosis.

Transactions of American Pediatric Society. Nineteenth Session. Washington, D. C., May 7-9, 1907. S. S. Adams, M. D., Secretary, Washington, D. C. Vol. XIX. Reprinted from Archives of Pediatrics. Treat & Co., publish New York. 1908. 8vo. 220 pages. Cloth.

A good surgeon must be a good anatomist,

This bound volume of Society transactions

is issued just one year after the session at which the papers were read, and which have already been published in the journals.

Text Book of Diseases of the Nose and Throat. By D. BRADEN KYLE, A. M., M. D., Professor of Laryncology and Rhinology, Jefferson Medical College, etc. With 219 illustration 26 of them in colors. Fourth edition, thoroughly revised and enlarged. Philadelphia and London: W. B. Saunders Co. 1903. 8vo. 797 pages. Cloth, \$4 net. Half morocco \$5.50 net.

The former editions had established for this book a standard position. But the additions and revisions to be found in this fourth edition are so numerous as to place the former editions on the retired list. The additions include about thirty new chapters, and practically all the other chapters contain additions or alterations—thus making this a new book. It is a quite complete work for the practitioner as well as specialist, and its systematic arrangement and dealing with subjects make it also a first rate text book for the rhinological and post-pharyngeal student. Guides for examinations, manner of using instruments, how to make applications, and good advice as to plans of treatment of diseases and disorders of the parts involved are well and authoritatively stated. Illustrations help the text descriptions. An unusually full index of 48 double column, closely printed pages renders reference to a subject easy.

Hospital Training-School Methods and the Head Nurse. By CHARLOTTE A. AIKEN, Late Director of Sibley Memorial Hospital, Washington, D. C., etc. Philadelphia and London. W. B. Saunders Co. 1908, 12 mo. 267 pages. Cloth \$1.50 net.

The more we study the matter, the more are we convinced that two years is a long enough tuition period for a properly prepared student in a well arranged and managed general hospital. It is a waste of time and energy to require three years or a longer course to become a well trained nurse. While the authoress does not appear to agree with this view, yet examination of this book confirms our belief. Going over the same field an extra year, and walking the same wards all the time is apt to lead to callousness and routine, and to apparent indifference to all else, when the nurse goes into the private family, except the reception of her weekly or monthly pay. But many training schools are simply surgical hospitals where no obstetric training, nor nursing of general diseases like fevers, those of child-

ren, etc., can be practically taught. In such cases the book under consideration is an excellent text book—telling about much which ought to be acquired by observation. In short, this is a first rate book for the pupil as well as the graduate nurse, teaching matters of daily importance for the nurse in the sick room. A long division of eight chapters is devoted to the duties of the "head nurse." It is a good book for undergraduates who may assume the duties of a general nurse.

Atlas and Text Book of Human Anatomy. By DR. JOHANNES SOBOTTA. Professor of Anatomy, University of Wurzburg. Edited with additions, J. PLAYFAIR McMURRICK, A. M., M. D., Professor of Anatomy, University of Toronto, etc. VOL. III. **Vascular System. Lymphatic System. Nervous System, and Sense Organs.** With 297 illustrations, mostly in colors. Philadelphia and London. W. B. Saunders Co. 1907. 4to. 342 pages. Cloth, \$6 net. Half morocco, \$7.50.

This third volume completes the work—the first and second volumes being noticed early in 1906. This third volume equals the others in accuracy of text description and in colored illustrations of the parts referred to in the above title. Not only does this work serve as one of the very best guide books for the dissecting room, but it is equally serviceable to the surgeon—whether general or special. To the neurologist, with the fully 135 pages of text, and the numerous full page illustrations of the several sections of the brain, spinal cord and nerves, this volume must prove ever serviceable for study and reference. The skill of the artist in arranging the pictures of various parts might be said to require but a few foot notes in full explanation; but the text is as good as the pictures, and thus this *Atlas and Text Book* will long remain a standard work on Human Anatomy. The index to this volume, as to each of the other two, is very full.

Treatment of Fractures—with Notes on a Few Common Dislocations. By CHARLES LOCKE SCUDDER, M. D., Surgeon at Massachusetts General Hospital, etc. Sixth edition. Thoroughly revised and enlarged. With 856 illustrations. Philadelphia and London. W. B. Saunders Co. 1907. 8vo. 628 pages. Polished buckram, \$5.50 net. Half Morocco, \$7 net

First published in 1900, the present edition is the sixth—each edition being an improvement on its predecessor. The popularity of the book is easily explained by the profusion of its illustrations of conditions and the technic in manag-

ing the same, and the plain simplicity of descriptions. Points of diagnosis are well brought out, and the most approved methods of treatment—most of them verified by the experience of the author—are given in sufficient detail. The work serves as a picture clinic, and should be in the library of every doctor,—whether he is called as “first aid to the injured,” or as a specialist in fracture work. The notes upon a few Common Dislocations—occupying nearly 40 pages—especially in connection with fractures, form an important addendum. Beside the full and well arranged table of contents, the index is ample for purposes of ready reference. This is a valuable practitioner’s book—especially for one who is known in his community as a surgeon.

Editorial.

Do Society Transactions Volumes Pay?

The editor of this journal has been secretary of the Medical Society of Virginia practically ever since its organization in 1870, and has had many occasions, in correspondence with members, to refer to its annual volume of Transactions. It is surprising to note how few keep them, and how very few ever read the papers in them. The books, as received by members, are perhaps thumbed and laid aside for examination at a more convenient season, which never comes, and in the course of a year or two, become rubbish and thrown aside. Perhaps the minutes of the session, the biographical register, etc., are casually examined; but the scientific papers and discussions are not generally read.

The now yearly decreasing number of State Societies that issue *Transactions* volumes at all can rarely issue them in less than many months—even as late as eight, ten or twelve months—after a session adjourns—long after all interest in the last session is gone, and when expectancy is centering on the next.

Until about twenty years ago medical publications were relatively rare, so that long unrevised editions of text-books were used in colleges and by doctors as authority. But who, now-a-day, with the rapid strides that mark this age, cares for a medical publication even ten or less years old, unless possibly for its historic

interest? In this day of multitudinous medical publications and rapid revisions, there is practically no demand except for the very latest.

Annual volumes of *Transactions*, filled with medical and surgical papers, are fast going out of date. They are an exceedingly burdensome expense upon Societies and, in our opinion, are in no way compensative. For a Society like that of Virginia, where the annual dues per member are only two dollars, these complete volumes are a luxury which the treasury cannot stand, and for which members will not pay, as shown by their unwillingness to raise the annual dues to \$3 or \$4 or even \$5, which some medical societies charge for membership.

The *Transactions of the Medical Society of Virginia* for 1907 cost well over \$1,000, delivered to members, exchanges, etc. The session that year, however, was held at an out-of-the-way place, and the total attendance of members, invited guests, fraternal delegates did not exceed 140. Nearly 300 pages of that volume were taken up with scientific papers and discussions; and yet, what members have read them or what journals have reviewed them?

Hereafter this Society is to meet in the cities of the State, and we may reasonably expect an attendance of fully 500 during the October session in this city. The total number of papers promised for this session is over seventy—about twice as many as were presented at the session of 1907. If all of these papers and the discussions are published in the *Transactions*, the volume, as a whole, would much exceed 1,000 pages. If practically nobody has read the nearly 300 pages in the published volume of last year, most of which were excellent, how greatly fewer will read the 1,000 pages?

To publish in book form such a volume will be beyond the ability of the Society unless there is an increase of the annual dues per member, and such a measure would be plainly impolitic and unwise at this time. If the Publishing Committee cuts out certain contributions and discussions, such a course would appear to be discriminative, and give offense to authors and their immediate friends, who would accuse the Committee severely of partiality. What, then, is to be done?

Years ago, the American Medical Association, and later, State Medical Societies, one by

one, discontinued the publication of bound volumes of *Transactions*, and began their journalization. Such action naturally leads one to inquire into the merits or demerits of such a phase of the question.

Most of the distinctively State Society medical journals do not permit papers read before sessions to be published elsewhere. They are *official organs* of their respective State organizations, and scarcely have a flattering general circulation outside. Their environments are entirely too restrictive to permit even the best of them to have more than a limited subscription patronage. The Medical Society of Virginia is more liberal, and, we think, adopts a wiser course in not restricting the publication of papers presented it. Authors often do contribute their papers to established journals published in other States as well as in Virginia.

Long years of observation have convinced us that *Transactions* volume papers and discussions are not at all commonly read, except by authors themselves to detect typographical errors, etc., and that reputable journal articles are very generally read according to the interest that the subscriber feels in the subject of the titles. Requests for a journal containing a definite article very often comes in—even years after publication—which the correspondent wishes to consult; and the cost is far more trifling than if a bound volume of *Transactions* were ordered, which latter would be almost prohibitive to the party wishing to see it.

We would suggest, as the best way to deal with this question, to let authors themselves select the journal in which they wish their article to appear, with the stenographic report of discussions thereon, and report such selection promptly to the secretary of the Society, so that he may make note of proper reference to the journal in which such and such an article may appear. These references then become a part of the record of the session, and enables any one interested to trace the disposition of a paper and its discussion. Well established medical journals, as a rule, would be glad to receive and publish them, and give them a far wider reading circulation—a thing the author generally desires. Society members do not read them in their own long-delayed copies of bound volumes of *Transactions*, but do generally read them in the journals they take. Besides, au-

thors themselves very commonly order large editions of reprints from journals for complimentary distribution.

True, no medical journal wants every detail of a Society's proceedings, its complete necrological reports, the detailed reports of various officers and committees, the full text of the constitution and by-laws, the biographical register of members, and such things. These are items that burden the pages of the official State medical society journals, and make them tiresome. Yet all such matters should be preserved for the special uses of Society members. All such things should be annually published in pamphlet or book form as preferred, for distribution to members, and would prove in every particular as valuable to them.

To summarize: The scientific papers in volumes of medical societies' *Transactions* are rarely examined, whereas the same articles contributed to reputable medical journals are generally read by parties interested in the title or author, and have a far wider range of circulation than the State limits. The publication of such full volumes of *Transactions* is necessarily always very much delayed, until interest in the papers contained therein is practically gone. There is no longer any demand for them, and after reception they soon become almost waste paper. They are an excessive expense upon the organization, without appreciative compensation in return. Journalizing scientific papers and discussions has become the order of the day, which gives them not only a much larger, but much more useful circulation. Articles read before Societies and given over to journals according to the author's preference, can always be easily found by requiring the writer to furnish the Secretary with proper references. Such references should be incorporated in the minutes of the session, and these—with the reports of officers, committees, etc., which concern the Society only, as also the Constitution and by-laws of the same, the statistical tables and the biographical register of members, etc.—should be published in separate form (pamphlet or book), and distributed regularly to members.

By the adoption of some such system as has been as briefly outlined as practicable, good results would come to State medical societies, without the increase of annual dues per member to publish a volume of perhaps seventy medical

and surgical papers which will scarcely even be examined; and the profession at large would also reap benefits from mines of wealth not otherwise open to them.

The plan proposed differs from that of any of the States, it is true, but it appears to us so greatly superior to that adopted by any other State medical association, that if adopted by the Virginia Society, it may result in becoming again a leader of other States.

Norfolk, Va., Health Reports.

About the most encouraging of the health reports that have come to our table is that for July, 1908, from the Norfolk Department of Health, of which Dr. H. R. Dupuy is Commissioner. The U. S. Census Department estimates the population at 70,130—39,585 whites, and 30,545 colored. The following figures show the population and total mortality for the past seven years, for June and July, as follows:

Year.	Population.	June.	July.
1902	53,974	114	113
1903	55,149	97	117
1904	55,662	98	110
1905	58,006	106	110
1906	66,931	133	120
1907	68,530	178	149
1908	70,130	119	108

These figures tell their own story, especially when it is recalled that the population of Norfolk is now about 16,000 more than in 1902, and that each year since there has been an increase in perfection of mortuary statistics in that city. The decrease in infant mortality is still more striking.

Among other commendable features of the Norfolk Health Department is the regular inspection of milk and foods, which led to the condemnation and destruction during July of 940 pounds of meats, 135 crates of canned goods, etc. Constant inspection of premises, sewers, abatement of nuisances are daily routine work. The results of the work of the Norfolk Health Department are most commendable.

The American Association of Obstetricians and Gynecologists

Will hold its twenty-fifth annual session at Hotel Belvidere, Baltimore, Maryland, September 22-24, 1908, under the Presidency of Dr. Gustav Zincke, of Cincinnati, and Dr. William Warren Potter, of Buffalo, N. Y., secretary. Dr. W. A. B. Selman, of Baltimore, is chair-

man of the Committee on Arrangements. Fifty-six prominent authors had promised papers when the preliminary announcement was issued. Thirty minutes is the time allowed for reading a paper, which is afterwards open for discussion. Twenty hours and a half is the total period allowed for the scientific session. If not a minute is wasted by delays, etc., we are curious to know how the nearly sixty papers are to be read and discussed according to their merits. It is impossible for more than forty papers to be read without discussion of any of them, leaving some twenty or more perhaps that can only be reached by titles. But the program, as given, is very inviting, and all members of the profession will be accorded a cordial welcome to the scientific sessions.

The Southside Virginia Medical Association

Held its twenty-second quarterly meeting at Courtland, Va., September 1st. While the attendance was not large, the interest manifested in the papers read was not lacking. The subject for general discussion was: "Abortion, with Especial Reference to Treatment," Dr. R. L. Raiford, of Conley, being leader. The other papers on the program were: "Post-Partum Hemorrhage and Its Treatment," by Dr. E. R. Hart, of Suffolk; discussion opened by Dr. Joel Crawford, of Yale; "Further Remarks on Appendicitis," by Dr. Southgate Leigh, of Norfolk; "Application of Forceps—A Plea Against Their Too Frequent Use," by Dr. Burnley Langford, of Norfolk; "Uterine Displacements—Results Obtained by Different Methods of Treatment in 225 Cases," by Dr. Frank H. Hancock, of Norfolk; "Some Practical Points in the Diagnosis and Treatment of Fractures," by Dr. Armistead K. Tayloe, of Washington, N. C.; "Relation of Pathology to Modern Surgery," by Dr. J. Shelton Horsley, of Richmond; "Hernia," by Dr. George Ben Johnston, of Richmond; "A Few Remarks About Operations Upon the Urethra," by Dr. R. C. Bryan, of Richmond; "Pruritis," by Dr. T. W. Murrell, of Richmond; "Tuberculosis of Cecum," by Dr. R. O. Rogers, of Richmond; and "Public Health," an address delivered at the night session by the State Health Commissioner, Dr. Ennion G. Williams, of Richmond. After adjournment a luncheon was given the visitors at the Courtland Hotel.

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Original Communications.

A FURTHER CONTRIBUTION TO THE TREATMENT OF SOME NEUROSES BY BIER'S INDUCED HYPEREMIA.

By ALFRED GORDON, M. D., Philadelphia, Pa.

Associate in Nervous and Mental Diseases, Jefferson Medical College; Neurologist to Mount Sinai Hospital; to Northwestern General Hospital; to Douglass Memorial Hospital.

In the May issue of *The Therapeutic Gazette* appeared a report of twelve cases showing the result of Bier's method employed by men in the treatment of certain neuroses. The systematic use of that method in all the cases, to the exclusion of any other therapeutic measure, convinced me of its usefulness and its superiority to any other treatment.

The opinion I expressed then, with regard to the pathogenesis of certain neuroses, finds its further corroboration in the additional clinical observations I am presenting now. I said that while muscular fatigue, irritation of peripheral nerves and cerebral influence are the three factors called upon to explain the phenomena of occupation neuroses—such as writer's, pianist's and telegrapher's cramp—nevertheless when a large supply of blood is procured by some artificial means, the nutrition of the exhausted muscles is thereby elevated and consequently their function improved. In acroparesthesia, a congestive hyperemia improves the nutrition of the sensory nerve-endings distributed in the skin of the extremities; the nerves suffer in this infection from insufficient supply of blood caused by contraction of the blood vessels. In neuralgia, the bloodvessels undoubtedly play a certain role in the causation of a degenerative state of the peripheral nerve, as can be seen at least from my pathological investigations (*N. Y. Med. Jour.*, July 21, 1906). These were my main reasons for attempting the new treatment in certain functional nervous disorders.

Not all of the cases of the first series gave uniformly satisfactory results. Four patients made a complete recovery, seven showed great improvement, one (tic of the neck) failed.

While seven patients only improved, this is, however, a sufficiently good reason of the reliability of the method, as other measures failed even to accomplish that much—the patients suffered pain and were unable to continue their usual occupations.

Since my first study which closed in March of this year, I made some further observations on other patients and am able to report six additional cases with very favorable results. Besides, it is gratifying to me to receive frequently in formation from my colleagues who followed my steps and utilized the treatment in their practice with equally satisfactory results. The desirability of still further trials is evident, as even if we are able to procure some relief from pain and some local improvement in the condition, we can accomplish a great deal.

The new cases are as follows:

Case I. Woman of 37, domestic, complained of tingling and numbness in the hands so that on several occasions she had to give up her positions. The acroparaesthesia was worse in the evening while she was in bed than in the morning. Exposure to cold and contact with water made her suffer considerably. She came under my observation six months after the onset, during which time various treatments were tried without avail. I applied Esmarch's bandage three times a day above her wrists for half an hour every time. Improvement was noticed after fourth application. The patient persevered in the treatment, and at the end of six weeks she felt very comfortable, although not completely cured. She found out that when she would apply the bandage in the morning and evening, the symptoms would almost disappear. At all events she can hold her position and make a livelihood.

Case II. Man of 29, has been suffering from

writer's cramp for eight weeks. The usual treatment failed to give him relief and he was advised to discontinue his occupation of book-keeper so as to give his right hand a complete rest. An elastic bandage was applied moderately tightly around the lower third of the right forearm for an hour twice a day. He was told to do writing with the affected hand, but only for an hour at the time, two or three times a day. At the end of a week improvement was noticed. The spasm of his thumb and index did not appear as often as before and was of shorter duration. Gradually the cramp disappeared completely and at the end of July, viz. five weeks after the first application of the bandage, the patient was totally free from the neurosis.

Case III. This case is remarkable in its rapid recovery. A young man of 22 was employed as a telegrapher. He developed a cramp in his left hand which compelled him to give up his work on a number of occasions for three or four days at a time. Various measures were tried but in vain. Ten applications of Esmarch's bandage above the wrist for an hour at a time and twice a day totally removed his spasm. Since June he has had no recurrence.

Case IV. A girl of 24, seamstress, was suffering from a brachial neuralgia of the right arm of four weeks' duration. Applications of liniments, of hot water, bathing, internal medications—all were employed but without appreciable result. The elastic bandage gave her more relief than any of the above measures. It failed however to cure her. For the last two months she has been using it daily and when she happens to neglect the treatment, the pain recurs. She is still under my care. It is difficult to tell the outcome. The arm presents no trophic or objective sensory disturbance except some hyperesthesia. The bandage is being applied around the shoulder joint.

Case V. Man, 44 years of age, brick layer, left handed, had been suffering from a paroxysmal cramp in the left hand for four months. At first it occurred only when he would do his usual work, but later on it appeared at any exercise. He was greatly inconvenienced, as the condition kept him from holding a position. When he came under my observation, Bier's treatment was instituted. Improvement was noticed only on the tenth application of the bandage. The treatment has been kept up for

the last two and a half months with two daily applications, of an hour each. At present while the patient is not entirely well, he nevertheless has improved to such an extent that he is able to return to bricklaying. An hour's application of the elastic bandage in the morning renders the condition tolerable for the day. Occasionally however, he has to quit his work once or twice during the day for about ten minutes, but then again after a rest he can resume it.

Case VI. Woman of 54, seamstress, began six months ago to suffer from paresthesia in her left hand. The sensation consisted of pulling, at times burning and sometimes tingling. It would come on only at attempts at sewing. She was compelled finally to give up her work. Any other occupation did not disturb her. Anxious to return to her usual occupation she tried various medications and even an entire month of absolute rest for the hand, but all in vain. When Bier's treatment was instituted, it took twelve applications of the bandage before amelioration was noticed. The patient was allowed to do some sewing two or three times a day. She has been under this treatment for seven weeks. Although she has not yet recovered, nevertheless the results so far obtained are by far superior to other treatments. The manner of application is identical with that of the other cases.

1430 Pine Street.

CASE OF DOUBLE SEPTIC PNEUMONIA— ACUTE DILATATION OF STOMACH, DOU- BLE EMPYEMA WITH DRAINAGE OF BOTH PLEURAL CAVITIES.*

By W. W. DUNN, M. D., Richmond, Va.

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Mrs. X., aged thirty; of good family history; multipara; pregnant eight months. On March 3rd; she had an attack of influenza, and was allowed to be up on the third day following. She sent for me again on March 6th. I found she had had in the early morning a violent pain in the epigastrium with repeated attacks of vomiting (no blood) followed by a chill. The pain was confined to a spot corresponding to the anterior surface of stomach near the middle of the lesser curvature. There was much cough; expectoration free and tinged with blood. Temperature 101.2; pulse and respir-

*Reported before the Richmond Academy of Medicine and Surgery, June 23, 1908.

ation increased; herpes of the upper lip. Loud rales in the larger bronchi; no consolidation; epigastrium tender, but not rigid. March 7th, cough was almost continuous; expectoration profuse with large streaks of blood; chill in the morning; no vomiting. I began to fear acute pulmonary edema, or pulmonary infarct. There were large and small rales over both lungs; no signs of consolidation; epigastrium negative. March 8th, third day, again a severe chill; frequent cough; expectoration profuse and streaked with blood. Temperature ranged, as on the previous day, from 101 1-2 to 102; pulse 120; respiration increased. Physical examination in morning negative as to consolidation. In the evening there was a suspicious area around the angle of the left scapula. March 9th, fourth day, there were signs of well developed consolidation of the left lower lobe behind and in the axillary line to the mid-axilla; tympanitic in front. Temperature 101 1-2 to 103; pulse 120-140; respiration 30-40; pleuritic pains; cough less frequent; expectoration less profuse, darker; less pure red blood; herpes all over upper lip. Quinine was injected twice at six hour intervals and strychnine used freely.

Crisis occurred early on the morning of March 10th, the fifth day of the disease. In the afternoon, there was enormous distension of the abdomen due to dilatation of the stomach. Introduction of the stomach tube resulted in the withdrawal of nearly two quarts of a reddish-brown fluid and a great quantity of gas. Collapse, which was threatening, was averted. Nine hours later, the same conditions being present, the tube was again used; every six hours saline enemata given and retained. No gas was expelled per rectum, nor was there any movement of the bowels.

March 11th, about 3 A. M., patient gave birth to an eight-month living child of whose birth she was unconscious. By 10 A. M., the stomach was so distended as to fill the abdomen to within three inches of the symphysis. The stomach tube, used at intervals of eight hours, gave relief for an hour or so. She was still constipated, and no gas expelled. Saline enemata were continued, and strychnine and oxygen given.

March 12th, the seventh day of the disease, the condition of the lungs was as before; dilatation of stomach diminished and in the

evening, the enema was expelled slightly colored. At this time the temperature, which after the first crisis had become normal, and during the onset of dilatation subnormal, again rose to 102 1-2; respiration to 50. There was severe pain in the right side and much cough, and signs of beginning consolidation in the region of the angle of the right scapula. Next morning, eighth day of the disease, consolidation was well marked in the right lower lobe. The stomach did not distend again after the use of the tube at 2 P. M., and a small liquid stool with much gas followed the enema. This was the fourth day without food. Saline was used every six hours; strychnine and atropine every three hours; oxygen every hour. In the evening, crushed ice, and later, liquid food were allowed.

March 17th, the temperature dropped and the respiration improved somewhat, though the pulse did not fall below 130. On March 23rd, six days after the second crisis, aspiration of the right side was done, it being impossible to elicit the presence of fluid by physical signs. Twelve ounces of dark greenish-yellow pus, smelling as though the colon bacillus were present, was withdrawn. Because of its character, it was thought that the seat of trouble was probably sub-diaphragmatic; so, the next day, under anesthesia, about three inches of the eighth rib were removed in axillary line, the pleura opened and about a half-pint of the same kind of fluid escaped, the lung coming well down to the opening. Three attempts at aspiration, with a trocar through the diaphragm failed to reveal pus. Palpation along the upper surface of the diaphragm failed to reveal irregularity or fluctuation.

March 25th, the patient's condition becoming steadily worse, aspiration was done twice on the left side. Believing that pus was probably under the diaphragm on the left side, it was determined to remove part of the seventh and eighth ribs in the axillary line, free parietal pleura and suture to diaphragm and aspirate through diaphragm. The pleural cavity was accidentally opened in removing one of the ribs. Both lungs immediately collapsed; all damage possible being done, the pleura was freely opened. Aspiration through diaphragm, avoiding stomach, revealed no pus. Upon examination of the pleural cavity, with the inserted hand, a pocket of pus was found near

the root of the lung, which contained about eight ounces of pus of same character as that on the other side. The lungs on both sides had collapsed to such an extent that they filled but one-half of each cavity. Drainage tubes were inserted and dressings applied. Patient when removed from the operating table was cyanotic. Temperature subnormal; pulse imperceptible at wrist; in a profuse cold perspiration; respiration between 70 and 80 and shallow. The upper part of the thorax markedly distended with a corresponding sinking of the lower part. Rales, large and small, over upper part of lungs. She had to be propped up into a sitting position. Oxygen used continuously for next six hours. At end of that time, tubes and dressings were removed and adhesive plaster applied to both openings. Some hours later the respiration improved and pulse became perceptible at wrist.

For next two days plaster was kept over openings; at end of that time the plaster was removed from one side and pus allowed to flow out, and then reapplied. Insertion of the finger revealed that the lung on that side had come down to near opening. The next day the same procedure was done on the other side and the same condition found. This method was continued twice daily for two weeks. An attempt to replace tubes on account of poor drainage, had to be given up, as resting on the diaphragm; they caused great pain and interfered with respiration; nor could the plaster be removed from both openings at the same time, unless dyspnea immediately followed. At the end of the third week from date of second crisis patient was still septic. During the change of plaster from right side a violent attack of coughing was followed by the expulsion of a large piece of tissue which microscopically resembled muscular tissue, followed by a large flow of pus. Her improvement dates from that time, though convalescence was delayed by a large bedsore. Three months later both sides had closed; bedsore healed and general appearance good. Patient is up and about.

Points of Interest:

(1). Marked herpes of lips from very onset and their increase until end of second crisis.

(2). Probable origin of seat of trouble (Ulcer of stomach? Acute pancreatitis?).

(3). Slow development of the pneumonia;

its irregular development and course; its low temperature; repeated chills; rapid pulse; tendency to pulmonary edema; attempt at crisis on the fifth day on each side.

(4). Pockets of pus and their location and failure to find with aspirating trochar.

(5). Character of pus.

(6). Acute dilatation of the stomach; cause, duration, course and treatment.

(7). The collapse of both lungs when the left and unopened pleural cavity was accidentally opened.

(8). Probable location of last pocket of pus.

(9). Imperfect drainage of pleural cavity, if opening is lower than fifth rib. Impossibility and inability of using drainage tubes, and of leaving both cavities open at same time.

THE RELATION OF PATHOLOGY TO MODERN SURGERY.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.

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It seems almost superfluous these days to emphasize the importance of pathology in its relation to internal medicine, but many overlook the fact that a study of pathology is even more essential to the proper understanding and successful practice of surgery than medicine. The glamour of the operating room often makes too profound an impression and questions of technique and operative procedures will consume all the time of the surgeon to the exclusion of the study of the pathology, both in the gross specimen and under the microscope. I do not wish to under-rate the importance of dexterity and skill in the performance of an operation. Such things are essentials, just as a knowledge of the lower branches of mathematics is necessary for the proper understanding of the higher branches. No one can be a good surgical diagnostician without a practical knowledge of pathology. The kind of knowledge that is carried in some one else's head is not the kind of knowledge that will be of the greatest service to the operator when he has to decide in an emergency whether some growth is inflammatory or malignant. No matter how skillful and dexterous the surgeon is, these accomplishments cannot compensate for operations unnecessarily performed. No amount of skill can

*Read at the Southside Medical Society, at Courtland, Va., Sept. 1st, 1908.

restore the mutilation which follows a radical operation for a tumor, when the knowledge of its pathology might have shown it to be benign. On the other hand, a small and limited excision of a growth that is malignant not only does no good, but actually hastens the death of the patient by opening new lymph channels and exposing freshly cut blood vessels for absorption of the cancer cells. Many an amputation of the penis has been done when a local excision of the squamous celled cancer would have been all sufficient, and many a tumor of the breast has been removed locally when the most radical operation possible would be all that could give the patient a chance for a cure.

It is well known that no cancer of the breast that has been incised for purposes of exploration and operation deferred for a few days, has ever been cured. The interval of a few days between the exploration and the operation is sufficient for so many cells to be taken up by the freshly cut surface that metastases will have gone beyond the surgeon's knife.

The only practical way to attain knowledge of pathology is by working for it, and the work must be done on the tissue itself. If the surgeon notes carefully the appearance of the freshly removed specimen and remembers the sensation that such a growth gives on palpation, and then follows this tumor through the laboratory and studies it under the microscope, he is in such a position that the next time he meets a similar tumor at the operating table the mental picture of the microscopical appearance of the other growth is at once recalled. In this way a delay (in many instances a fatal delay), which would otherwise be necessary to obtain a pathological report, is avoided.

In the matter of such common operations as that for appendicitis knowledge of pathology is of the greatest value. A study of each appendix removed will show the amount of inflammation present or whether there was any inflammation at all. Following this up with a careful history of the patient and the operation, and the history after the operation will exhaust all that can be learned about a case, and will enable the surgeon to differentiate more accurately between appendicitis and various types of abdominal neurasthenia, where an operation is worse than useless. These cases may be temporarily improved by the rest in bed following the operation, but soon come back complaining of the

same old pain, and the last stage of such patients is worse than the first. Their little stock of vitality has been exhausted by the ordeal of an unnecessary operation; and has left them "nervous bankrupts." If we cannot find in the gross appendix a concretion, or some evidence, present or past, of inflammation, or if a careful examination under the microscope does not show evidence of round cell infiltration, we might as well be honest with ourselves and search for something other than the removed appendix for the cause of the pain.

And so, in almost every operation, a surgeon will find that personal work in the laboratory, carefully going over the specimens and tissue he removes, will enable him to correct many errors and will increase his surgical efficiency as well as augment his wisdom as a diagnostician.

SHOULD WE HAVE A BUREAU OF HEALTH?

By J. G. B. BULLOCK, M. D., Washington, D. C.
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In view of the approaching meeting of the Tuberculosis Congress and the effort now being made to eradicate disease, the question arises, is it possible to properly enforce sanitary regulations under the present system or whether it will not be necessary to create a Department of Health which would take within its control everything coming under a sanitary head, such as inspection of meat and food in general; inspection of cities; internal and external quarantine? It is unquestionably absolutely impossible to thoroughly enforce proper and adequate sanitary laws by local health officers, for the reason that cities and counties can not and do not appropriate sufficient funds to get the necessary force and apparatus; secondly, health officers and boards of health are too often dominated by their environment, and are often inefficient and careless in enforcing sanitary laws; and thirdly, the impossibility of health officers carrying into effect quarantine and other regulations, among people in the country, who neither respect nor obey a local man. An officer appointed by the government would demand and carry into effect the proper hygienic principles and the people would obey the same.

It is well known that in the country districts measles, scarlet fever and other diseases are carried from place to place and that the sanitary conditions of farm houses and the surrounding premises are never in good condition—that the wells are often near the stable, and not far off we find that the privies are not disinfected and the contents hardly ever removed, while the maid persists in throwing slops out of the kitchen window.

On the Indian reservation, where scrofula, (a form of tuberculosis) prevails, and where other diseases often exist, we find that the Indian visits from reservation to reservation without any passport of health, and thus becomes the means of spreading contagion; and it is a well known fact that the Mexicans and Indians, in traveling from Mexico to the United States continually carry smallpox in their effects. There should unquestionably be quarantine stations through which all passing from either country should be forced to go, that their clothing may be disinfected, and each person, as needed, should be vaccinated. A treaty could be made between the two countries in regard to this matter.

Take our own cities, especially the public schools, where children become contaminated by disease, because the city fathers are too impetuous to employ in each school a physician, whose duty it should be not only to examine the children of the school but to visit every house where the children live and see that no one from an infected locality goes to school or leaves home after infection, or from an infected house before the proper time.

A physician, instead of being personally present and superintending the fumigation of a room, too often allows a layman to do so, for it is a fact that not only do children carry disease to the public schools, but a great deal of carelessness is shown in properly attending to sanitary matters of greatest importance.

The author, of course alludes only to the period when he was in service, and does not criticize the present administration, nor state this to be the case at present.

There is more or less carelessness shown in our Government departments, for every now and then we notice diseases of the skin among the employees; and we have noticed carelessness in the government service in regard to sweeping

the premises, which are often swept before having been sprinkled, in this way carrying germs and contaminating the atmosphere.

It would be well to call attention to the carelessness of the authorities in not forcing the proprietors of department houses to having their tanks cleaned, and thus creating a nidus, from which typhoid fever might be contracted.

Again as to the milk supply: Unless the following conditions are complied with, there is no use in trying to regulate the sanitary supply of this fluid.

A cow should be kept as clean or cleaner than an individual, by being thoroughly bathed at least once or twice a week, and only the purest water should be given to her; for if allowed to drink from the impure stream in the pasture, or from pools of water, she may, in this way, infect the milk, and thus carry the germ of disease. The attendant should not only be a healthy individual, free from disease of nose and throat, but should wear a white suit, and should have hands thoroughly washed before milking; the teats and udder of cow should, at every milking, be thoroughly washed with warm water and castile soap; and all vessels intended to receive the milk should be thoroughly scoured. The stall where the cow is to be milked should be of cement finish and thoroughly cleaned before the milking process begins.

After the milk is drawn it should be immediately put upon ice, and the utensil kept open, in order that the development of tyrotoxicon be prevented.

While we are desirous of preventing the spread of tuberculosis, should we not also be particularly careful in trying to stamp out those horrible diseases which have undermined the health of humanity for ages, namely, gonorrhœa and syphilis? No doubt gonorrhœa is the cause of many a case necessitating an operation for ovariectomy, beside other damages done to the system. Is not syphilis responsible for many cases of consumption by so undermining one's health that the germs of tuberculosis find a body in fit condition for its development? It certainly seems to be a factor in cases of locomotor ataxia. Although we know the dangers done by these terrible diseases, yet there is no government regulation, no care taken; but the infected are allowed to keep on spreading these diseases, and of this we are well aware.

In attending a clinic in the city of Washington, two cases of syphilis presented themselves. One of them was a good-looking mulatto boy, who had one of the secondary eruptions, which we were warned not to touch, as it was of a contagious nature, and yet likely enough this boy may have worked in a barber shop, restaurant, or private family; the other was an old negro who had a chancre. One can see how easily these horrible diseases can be spread amongst people in a community, and how, from drinking cups and towels and other methods, a whole community can become contaminated. We once heard Dr. Gihon, of the United States navy, recite a very sad case of a young woman who, in taking painting lessons from an artist and using the same brushes, holding them in her mouth as the painter was in the habit of doing, contracted, in this manner, syphilis. Too much carelessness is shown in barber shops, by not properly attending to the cleansing and disinfection of brushes, towels, etc., and we have noticed men using forks and dipping from different dishes, after which the forks were deposited in a tumbler of clear water, and afterwards used by other parties without any further cleansing of the same.

How long will the public allow these conditions to stand—this carrying of death, of suffering and of sorrow to the family and the nation?

We seek to promote peace amongst nations; love of brotherhood amongst men; and it is our Christian duty to cultivate and foster a love of humanity by treating every one fairly and aiding him in every way. Is it not strange that while we try to promote the prosperity of a country from a business standpoint, we neglect that part of man which would tend to better his condition from a sanitary standpoint? Wars may cease, and rumors of war, but until each man looks upon himself and others in a truly fraternal manner, and is just to all and seeks in every way to promote health, happiness, and peace, just so long will civilization be retarded and wars and suffering prevail.

In fact, before we can expect to have health, long life and happiness we must have a Department of Health, under the supervision of the United States government.

There should be a health officer appointed by the government, whose duty it should be to visit all the building and the employees and see that

every individual is free from contagious diseases, and that the offices, etc., are in a sanitary condition. Not only should all emigrants be inspected, as is now done, but there should be a general inspection of all buildings, and the question of child labor and sweat shops, and all matters, too numerous to mention, should be looked into. There is a very important matter calling for the closest scrutiny, which may not only jeopardize the health of the many, but seriously affect the farming interests of this country, and that is the case of that very serious disease called "pellagra," said to be caused by eating damaged maize, or Indian corn. If it is true that pellagra is due to maize, damaged or otherwise, it becomes a serious consideration, for not only is it a Western but a Southern staple. If it is not true that maize is the cause, then it should be contradicted. If it is true that only the damaged maize is a factor, how important that steps should be taken to protect the public against eating an article which is productive of so serious a disease! A bureau of health, then could look into all these matters, and be of untold benefit to our citizens and country.

CATAPHORESIS.*

By MARK W. PEYSER, M. D., Richmond, Va.
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Cataphoresis is the introduction from without of soluble substances into the tissues under the influence of electric pressure. A resumé of electrolysis may contribute to a proper understanding of the subject.

When a constant current is made to flow through a moist body capable of disassociation, there gather at the negative pole the bases and hydrogen; and at the positive pole, oxygen, chlorine and other acid gases. The former are electropositive substances, or kations; the latter, electronegatives, or anions.

Decomposition does not occur *en massé*, but only at the poles, there appearing in electrolysis of water, for example, an atom of oxygen, then seeking the oxygen of a molecule of water in its immediate neighborhood with which it combines because of its superior attractive power, being nascent; a third disassociation and combination occur, and so on throughout the mass

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until hydrogen appears at the negative pole. Decomposition of double salts in solution occurs similarly.

In passing, it may be well to state that additional phenomena take place in living tissue. With a fairly well-moistened electrode attached to the positive pole and placed on a mucous surface, say in the vagina, and another attached to the negative pole, placed indifferently, it will be noticed that there is drying of the former and decrease of milliamperage; but if the current is reversed without moving the controller, the positive electrode, now negative, will gradually become more moist, and the meter needle soon register the original amperage. The positive pole, therefore, is dessicating.

When copper needles attached to the poles are thrust into moist beef or coagulated albumen, it will be observed that at the negative pole there are frothings and a state of alkalinity due to the liberation of hydrogen and other bases; liquefaction, due to the attraction of water, and a loosening of the needle so that it can be readily removed. If the tissue were living, congestion could be easily discerned, and a tendency to bleeding, with pain. I have about come to the conclusion that much of the beneficial effect of negative galvanism is due to the hyperemia it produces. This being so, it might be used throughout the entire treatment of some of the diseases to be mentioned later. Thus, a new field is opened in that class of pathologic conditions in which the method of Bier was indicated, but could not be followed because of inapplicability of either torsion or vacuum, or both.

At the positive pole, the condition is acid, due to the liberation of oxygen and chlorine; there is drying and coagulation so that the needle is removed with difficulty; and a greenish discoloration appears and gradually penetrates the mass. The discoloration is due to the formation of the oxychloride of copper resulting from the action of nascent oxygen and chlorine on the copper electrode. Being a soluble salt, it is soon decomposed, the acid radicles remaining at the pole, while the copper ion is forced in as in the instance before described. On living tissue it is noticed that the positive pole is styptic, due to vaso-constriction, and is anesthetic.

To obtain the effects of the constant current

and at the same time, prevent electrolysis, it is only necessary to cover the electrodes with well-moistened cotton, spone, or clay, or to use an electrode of carbon.

Metallic electrolysis, the name sometimes applied to cataphoresis, is a misnomer, because there is no decomposition of metal, merely a propulsion of its ions. Neither should the term cataphoresis be applied exclusively, but rather, phoresis, which includes both it and anaphoresis.

We follow the law that likes repel, and dislikes attract, in choosing our active pole. Thus, iodine is electro-negative, and being repelled by the negative pole, or seeking the positive, we place it, or better, Lugol's solution, or solution of potassium iodide, on the negative electrode whence it passes into the tissue to be affected. If the anesthetic action of cocaine is desired, we place a solution of its salt on the positive electrode, knowing that bases are electro-positive, and repelled by the positive pole. In these two examples we have instances of anaphoresis and cataphoresis.

Metallic interstitial diffusion is the name given to phoresis of metallic electrodes. The metals used are mercury, zinc, copper and tin, mercury being employed in the form of an amalgam with the other metals, or with gold. This process possesses bactericidal properties in addition to the others mentioned in discussion of electrolysis; and the ions are propelled for some distance into the tissues dependent upon the electromotive force, quantity of current, time of application, size of electrode, and amount exposed, area and nature of tissue, etc.

The diffusion of metals is one of the most valuable agents in the possession of the electrotherapist; and the process has been so far developed that Massey and others now employ it in the treatment of cancer and other tumors to the almost total exclusion of other recognized methods. In the treatment of cancer of the breast, Massey uses amalgamated gold electrodes, the mercury leaving the gold, which is but little, if any, attacked, and radiating in dark lines through the growth toward the opposite pole. In some instances, he uses amalgamated zinc electrodes.

Hear his conclusions: "1. Massive diffusion of nascent mercury salts within a growth or cavity by electrification, constitutes a novel

therapeutic procedure of great value in the destruction of foci of malignant or non-malignant germ growths when the growths are so situated as to allow penetration and drainage. 2. Phoric destruction of the germs of primary cancerous growth in situ including outlying colonies and so-called roots of prolongation, permits preservation of unaffected portions of the organ of situation; and offers greater security against recurrence than efforts to remove living malignant growths by cutting operations. 3. While the phoric method may be employed as palliative in non-operative malignant growths and may, at times, cure, its chief value is in the total destruction of malignant germs in the early stages of primary growth, and in the same stages of purely local recurrences."

Phoresis is of special value in genito-urinary and gynecologic work. I have in mind the case of a young man who had gone through the hands of several physicians here and elsewhere. His condition had been diagnosed as tuberculosis by one, and as diabetes mellitus by another because of wasting. Careful examinations eliminated these. His chief complaint was of pain in the occiput and back of the neck. Saying that he was strictured, an examination was made and three were found, the last and smallest being in the prostatic portion and admitting only a 10 F. sound. In addition, there was a false passage and a condition of marked hypersensitiveness. I purposed using electrolysis for the cure of strictures, but the pain was so great that the first treatment had to be discontinued before completion. When he returned, several days later, copper diffusion was employed and repeated five days later. Coming for the third treatment, he said that the occipital and neck pain had entirely disappeared. It did not return; and whether as a result or a coincidence, he began to take on weight until he attained his normal. Hypersensitiveness having been overcome after several sittings, I essayed cure of the strictures, but after a number 14 F. had been passed by electrolysis, he refused further aid on the ground that he was very comfortable. I have seen the patient several times since, and he continues in good health. His condition was evidently one of neurasthenia, due to hypersensitiveness of the posterior urethra. All of us have seen such cases.

Overall and Neiswanger, of Chicago, claim excellent results in chronic prostatic enlargement from iodine phoresis—the former treating through both the rectum and urethra; the latter through the urethra alone. Possibly, the hyperemia produced at the negative pole has much influence on the result.

Patients with subinvolution, metritis, endometritis and erosions of the os are quickly benefited by mercury, copper or zinc phoresis. Ulcers, fistulae and chancreoids soon heal under its use; but to name all the diseases in which the method is applicable would be a waste of time, for they would readily suggest themselves if the basic facts are known.

In conclusion, I would mention some of the advantages of the method: Application of the medicament to the immediate seat of trouble, and in the nascent state; deep penetration in addition to superficial action of agents; avoidance of operation in many instances, and as a negative advantage, the difficulty of application is not greater than that of other measures for the same disease.

303 Twelfth St., N.

ECTOPIC GESTATION, WITH REPORT OF A CASE THAT WENT BEYOND FULL TERM.*

By HERBERT W. LEWIS, M. D., Richmond, Va.

Causes.—The real cause of ectopic gestation is still a subject of speculation. It occurs most commonly after a long period of sterility, chronic inflammation, torsion, reversal peristalsis, and congenital malformation. Tumors of the tube, tumors which press on the tube, or bands of adhesions which constrict its caliber, are all contributory factors.

Frequency.—Tubal pregnancy is not frequent, as shown by the number of pelvic hematoceles, which are almost invariably due to tubal rupture. Formad found thirty-five cases in thirty-five hundred general autopsies. In my limited experience, I have delivered fifty-four full term intra-uterine pregnancies, and have seen one extra uterine pregnancy.

Varieties.—As most recent authors deny the existence of either primary ovarian or abdominal pregnancy, I will consider them all as tubal under the three following varieties: (a) Interstitial, or Tubo-uterine; (b) Isthmic, or tubal; (c) Ampullar, or Tubo-ovarian.

The *interstitial* is the rarest form of tubal

pregnancy. In this form the ovum is implanted in that part of the tube which traverses the uterine wall.

The *isthmic* is more frequent than the interstitial, but less frequent than the ampullar. In this form the ovum is implanted in the middle part of the tube.

The *ampullar* is the most frequent form. In this form the ovum is implanted in the outer portion of the tube.

Development and Course.—After the ovum has become implanted in the tube, the development continues to follow the same course as when in the uterus, so far as the unfavorable surroundings and conditions will permit. The placenta, from which the foetus gets its nourishment, in normal gestations, is formed conjointly from the uterine mucosa and the foetal structures.

In tubal pregnancies, there is never found any tubal decidua, but there is always a uterine decidua formed, which is expelled at the time of spurious labor, which usually occurs at the time of tubal rupture or abortion.

After the impregnated ovum becomes implanted in the tube, the tube becomes extra vascular, its walls swollen, the abdominal end is closed by the eighth week, and finally its walls become thinned and less resistant. As the foetus enlarges, the course of gestation will be modified in one of the following ways, either by tubal abortion, or by tubal rupture.

Tubal Abortion.—The fetus is expelled through the ostium abdominalis into the abdominal cavity; this necessarily occurs before the eighth week. In this accident, the product of conception is discharged through the still open ostium into the abdominal cavity. This may prove fatal from shock and loss of blood, or the patient may recover, with the formation of a pelvic hæmatocele, which may be absorbed or become infected.

Tubal abortion is most frequent in the ampullar; is never seen in the interstitial, and is rare in isthmic pregnancies.

Tubal Rupture.—This may occur at any period, but most frequently between the fourth and twelfth weeks. The tube may rupture and expel its contents into the abdominal cavity between the folds of the broad ligaments, or into the cavity of the uterus. The rupture is usually sudden, hemorrhage profuse, followed

in a few hours by death of the patient. Sometimes, however, the tubal wall gives way gradually, and the bleeding is not profuse, being stopped by the ovum blocking the opening. The patient may rally and die from a subsequent hemorrhage or the hemorrhage may stop permanently and recovery take place—the blood and ovum being absorbed by the peritoneum, or the pelvic hæmatocele may become infected, rupture into some of the hollow viscera, and be followed by a slow, painful and tedious recovery; or it may rupture into the peritoneal cavity, set up general peritonitis and death.

In the interstitial variety, rupture may take place into the uterine cavity; the placental attachment not being destroyed, gestation continues to term, and the child may be delivered through the natural channel. The foetus, as a rule, dies at the time of the first hemorrhage, *but in very rare cases*, if the placental attachment is not destroyed, the foetus continues to develop and goes to full term. After full term, if the foetus is not delivered by laparotomy, it may undergo either suppuration, calcification or mummification.

Symptoms.—The earlier symptoms do not differ materially from those of intra-uterine pregnancy. Menstruation usually ceases, but may be only irregular or uninterrupted. There may be irregular uterine hemorrhage; morning sickness may be present or absent; colicky pains, due to uterine contraction during the second month, or at irregular intervals throughout the whole period of gestation, pigmentation, enlargement of the breast and the formation of colostrum, are usually seen. At the time of rupture the patient complains of severe colicky pains in the lower abdomen, nausea and vomiting, faintness, yawning, clammy perspiration, rapid pulse, thirst—in fact, all the symptoms of internal hemorrhage. At this time, she may have spurious labor, with expulsion of the uterine decidua. This may prove fatal, or there may be repeated attacks of hemorrhage, from all of which she may recover, and the ovum continue to grow. Foetal movements can be seen and felt; there will be symmetrical enlargement of the abdomen. By vaginal examination, the uterus will be found enlarged, displaced and fixed, its cavity empty, convex, slightly dilated, and a mass felt on side or back of uterus; foetal parts may be made out.

Case.—On May 1 1907, I was called to see this patient, a negro woman, age 36 years, married. She gave birth to a child in 1889, aborted on September, 1889, menstruated regularly up to December 14, 1906, and aborted again in February, 1907, so she said. I found her very much emaciated, sunken eyes, very anemic, heavily coated tongue, loss of appetite, nausea and vomiting, especially in morning. Pulse very rapid and weak; she was not in bed, but just dragging around. On vaginal examination, I found the uterus enlarged, very nodular and immovable, and a hard nodular condition of the right tube.

Diagnosis.—Pregnancy, complicated by multiple uterine fibroids.

Prescribed some stomachic sedative, and then a tonic of iron and strychnine.

On May 30th I was called to see her again and found a very different picture. The nausea and vomiting had ceased, emaciation and anemia had disappeared, and she had a good appetite, was walking around attending to her duties. She had become alarmed because she could feel the foetal movements.

On October 12, 1907, Dr. J. H. Winfrey

mass to the right and above the cervix, which we took to be a fibroid tumor. Not being able to arrive at a diagnosis, we decided to wait and give nature a chance to see what she would do. She was told to notify us when she had a pain.

After studying over the case and reading everything I could find on the subject, and having several consultations with Dr. Winfrey over the 'phone, we decided it was a case of ectopic pregnancy. Dr. Winfrey went by to see her, and advised her to go to a hospital for operation.

On November 23, 1907, Dr. J. E. Warriener and I saw her, when we obtained the following history: She had menstruated regularly since her abortion in February, 1899, up to December 14, 1906. On January 26, 1907, after walking about three miles, she was seized with colicky pains in the lower part of her abdomen, great depression, nausea, vomiting, faintness. These symptoms lasted about twelve hours. On February 7, 1907, she had a return of the same symptoms. On February 10, 1907, she had labor pains and expelled the decidua; suffered with nausea and vomiting from February 15 to May 15. Felt foetal move-



and I saw her together, when she was supposed to be in labor. She had no pains, but had been in bed some two or three days on account of a sort of pelvic uneasiness. On examination, we found the cervix slightly dilated; through the cervix we could make out a mass, apparently the foetal head, but there seemed something between the finger and the foetal head—we could not make out what. We could feel a

ments from about May 25 to October 1. On vaginal examination we found the cervix dilated enough to admit two fingers. Uterus enlarged and pushed to the right side. Its cavity empty, a mass to the left and behind the uterus. A positive diagnosis of ectopic pregnancy was made.

The patient was referred by me to Dr. J. Shelton Horsley. After a thorough examina-

tion, he concurred in the diagnosis, ectopic pregnancy, past full term. An operation was performed by Dr. Horsley, at his clinic in the Memorial Hospital, on November 25, 1907. A median incision was made and a large sac exposed, which was markedly adherent to adjacent structures. These adhesions were dissected loose and bleeding points ligated. This left the sac free, except at its base. As the lower portion of the sac wall was composed of broad ligament and a part of the sigmoid, it was impossible to extirpate this sac; so the abdominal cavity was protected by moist gauze and an incision rapidly made in this sac. A full sized male baby was delivered. A photograph, taken immediately after operation, shows the appearance of the child. The skin was considerably macerated and the general appearance of the baby gave the impression that it had been dead several weeks. The placenta was firmly attached to the base of the sac, and could not be removed without great difficulty. As the patient was not in good condition, the sac was packed with sterile towels and sewed to the abdominal incision with a running cat-gut suture and a few silkworm gut sutures were placed at intervals along the incision, so separating it entirely from the peritoneal cavity.

The patient was then removed to her bed. The whole operation took about twenty-five minutes. She made a satisfactory recovery, though it was several weeks before all the placenta came away. The sac gradually closed up by granulation, leaving a sinus, which took several weeks to heal. She was discharged from the hospital January 15, 1908. At present the patient is in good condition.

R. F. D., No. 7, Richmond.

PRINCIPLES OF SURGERY.*

By STUART McGUIRE, M. D., Richmond, Va.
Professor of Principles of Surgery and Clinical Surgery,
University College of Medicine, Richmond, Va.
LECTURE XLIX.

Surgical Fevers, Continued—Septicemia and Pyemia: Definition, Pathology, Causes, Symptoms, Diagnosis, Prognosis, Treatment.

III. SEPTIC INFECTION.

A sharp distinction must be made between

septic intoxication, which is due to the absorption into the system of the products of putrefaction, and septic infection, which is due to the introduction into the system of micro-organisms, which retain their capacity for reproduction in the blood. In one case the poison is a chemical agent which can, in a large measure, be controlled; in the other it is a vital agent, which, once in operation, has passed beyond the reach of local treatment. In septic intoxication, the poison is absorbed from a source practically outside of the body; while in septic infection, the poison is elaborated in the blood and tissues of the patient himself. For septic intoxication to develop, there must be a cavity of considerable size to contain putrefying tissue; while septic infection often starts from some trivial wound, such as a needle prick or slight abrasion received during an operation on a septic patient, or in a post-mortem upon a body dead of some virulent disease. In septic intoxication, the symptoms often manifest themselves suddenly, with maximum intensity, owing to the rapid absorption of a large dose of chemical poison; while in septic infection, the symptoms are more gradual in onset, as it usually takes some days for the germs to effect localization and produce toxins.

I. SEPTICEMIA.

Septicemia is a form of fever due to the introduction into the system of living pathogenic micro-organisms, which multiply in the blood and tissue, producing progressive sepsis.

Pathology: Many different varieties of bacteria are capable of causing septicemia. The size and location of the wound through which they enter does not influence the virulence of the disease. The degree of sepsis resulting is dependant on the number and character of the invading organisms, and on the resisting power of the patient. After the microbes gain an introduction into the body, they enter the circulation, either directly through a vessel wall, or more indirectly through the lymphatic system. They become widely disseminated, undergo rapid proliferation, and produce toxins directly in the blood and tissues of the victim. There is a short period of incubation after infection, before development of symptoms, because some time must elapse before a sufficient amount of poison is produced to have a constitutional effect. The condition, however, is progressive, and the symptoms grow steadily worse; and

*These lectures on Principles of Surgery embrace a series of fifty lectures by the author before his class at the University College of Medicine, Richmond, Va., and will be published in this journal in regular order until completed.

unless there is early intervention on the part of the surgeon, or great resistance on the part of the patient, death is almost inevitable.

Causes: At one time it was believed that septicemia was due to a specific germ, the microsporon septicus. It was next thought that it was caused only by pyogenic organisms, such as the streptococcus, staphylococcus, gonococcus, pneumococcus and colon bacillus. The reason why inoculation with pus microbes will cause local suppuration in one case, progressive septicemia in a second, and pyemia in a third, does not permit of satisfactory explanation. It is now known that, while a large majority of cases of septicemia are due to pyogenic organisms, other bacteria also have the power of producing sepsis. Septicemia is sometimes seen following wounds that do not suppurate, and, in fact, some of the gravest types, such as puerperal septicemia, or blood poisoning following a dissecting wound, are due to germs which have no pyogenic properties.

Symptoms: The symptoms of septicemia usually develop from one to three days after infection takes place. They are gradual in onset, but tend to become progressively worse. There is often a more or less distinct chill, followed by a gradual rise of fever, the temperature varying between 103 and 106 degrees F. The pulse is at first strong, but becomes rapid, small and intermittent as the disease progresses. A low temperature, with a weak, compressible pulse indicates a graver degree of sepsis than a high temperature, with a good pulse. The face presents a characteristic appearance. The skin is yellow, the cheeks flushed, and the eyes sunken and surrounded by dark circles. The patient is apathetic and listless; he complains of no pain; states that he is feeling well; and shows no anxiety about his condition. There is complete loss of appetite, some nausea, and perhaps vomiting. The urine is scanty, high colored, and loaded with urates. An examination of the wound will show the local signs of infection.

As the disease becomes more severe, delirium ensues, muscular tremor develops, the tongue becomes dry and cracked, the pulse progressively weaker, and the patient exhibits the picture of the so-called typhoid state. The blood always shows leucocytosis, which is progressive in character. The number of leucocytes often reaches 40,000. There is an increase in the

proportion of polynuclear cells, and the iodine reaction is positive.

Diagnosis: The diagnosis is based upon the occurrence of fever and the other symptoms described, the second or third day after the injury or operation, and the evidence of infection in the wound.

The condition must be distinguished from aseptic fever, autotoxemia, sapremia, typhoid fever, and acute suppurative osteomyelitis.

Aseptic fever occurs within a few hours after the infliction of the wound, and never develops later than twenty-four hours. The fever at once reaches its maximum, and the general condition of the patient remains good.

Acute autotoxemia occurs in patients whose emunctories are inactive. There is no sign of infection in the wound, and the symptoms are promptly relieved by eliminative treatment. Sapremia is marked by the sudden onset of the symptoms, and the presence of putrefactive changes in the wound. Typhoid fever has its prodromal stage, usually no history of trauma, and can be diagnosticated positively by the diazo and Widal tests. Suppurative osteomyelitis can be recognized by the presence of tender points at the juncture of the shaft and extremity of the long bones.

Prognosis: This is always grave, and depends upon the character of the infection, the resisting power of the patient, the severity of the symptoms, and the accessibility of the primary point of infection to surgical treatment.

Infection with streptococci is more fatal than with staphylococci. A mild case of septicemia in an individual of poor vitality in the victim of some organic disease, is more dangerous than a graver degree of septicemia in a healthy, vigorous individual. The outlook is bad when the temperature is subnormal, the pulse weak, the tongue dry and brown, vomiting persistent, and the patient delirious or comatose. The prognosis is more favorable when the infection takes place at a point accessible to local disinfection, than when it occurs at a location difficult to reach.

Treatment: Prophylaxis consists in the aseptic and antiseptic treatment of wounds to prevent infection in operative cases, and to effect sterilization in accidental injuries. Senn states that "any method or methods of treatment when can be relied upon in the prevention of

suppuration, will be found equally efficient in preventing septic infection."

When septicemia develops, the wound should be opened, irrigated and disinfected, thoroughly drained, and protected with a wet antiseptic dressing. The patient's bowels should be moved with a small dose of calomel, and afterwards controlled, if necessary, by bismuth and salol. His strength and resisting power should be sustained by stimulants and food. Strychnine should be given hypodermically in large doses, and alcohol in sufficient quantity to produce decided effect. Concentrated, nutritious, but easily digested food should be administered by mouth in small quantities at frequent intervals. If the condition of the stomach is bad, resort must be had to rectal feeding, and a nutrient enema of peptonoids, whiskey and saline solution given every six hours. Fever must be combatted by cool baths and alcohol rubs, and nervousness and insomnia controlled by the administration of small doses of morphine. Formalin solution in a strength of 1-800 has been recommended, by hypodermoclysis, but it is doubtful if it is any better than simple salt solution, which acts by diluting the toxins in the blood, and favoring their elimination through the kidneys. Intravenous injection of colloidal silver is reported by numerous authorities to be of decided benefit in some cases. The use of Marmorek's antistreptococcic serum will often be followed by a cure in a pure streptococcic infection, but the remedy is useless and often dangerous when the condition is due to other organisms, and hence it should only be employed after a bacteriological examination of the wound secretion or blood of the patient.

II. PYEMIA.

Pyemia is a form of fever due to the entrance into the circulation of pus or pyogenic micro-organisms, and their distribution through the circulation as emboli, resulting in the formation of metastatic abscesses.

Pathology: Every case of pyemia is secondary to a local focus of suppuration. The steps of the process are as follows: There is infection of tissue, and suppurative inflammation takes place. With the extension of the process and invasion of adjacent structures, a vein is finally reached. The pus organisms attack its coats, producing phlebitis. The tunica intima becomes roughened, and as a consequence, thrombosis or coagulation of blood occurs. The

intravenous clot being septic and friable, undergoes disintegration, and emboli are thrown into the circulation. These lodge at various parts of the body, producing infarction or ischemia of a wedge shaped portion of tissue. The infarct becoming infected from the septic plug which produced it, softens, liquefies, and is converted into pus, constituting a metastatic abscess.

A thrombus is an intra-vascular or intracardiac clotting of blood, occurring during life. The thrombosis of pyemia is primarily a phlebitis. The endothelial lining of the vessel becomes rough, leucocytes accumulate upon it, and coagulation of blood results. According to their location with reference to the vessels, thrombi are described as arterial, venous, capillary, or cardiac; according to their composition, as white, red, or mixed. Clinically, thrombi are classed as simple or aseptic, and infectious or septic. From a surgical point of view, especially in relation to pyemia, all thrombi should be regarded as infectious. The causative factor is a pyogenic microbe; the primary lesion, a phlebitis; the terminal process, thrombosis and embolism.

Septic thrombi tend invariably to disintegration or puriform softening, and small fragments containing pyogenic organisms become detached, and enter the general circulation. Such emboli, during their transportation through the circulation, become arrested and establish independent centers of suppuration. An embolus is a detached thrombus, or some foreign material which is carried into the blood current, and thence transported to its place of impaction. The process of transportation is called embolism.

Emboli lodge in small arteries and capillaries, causing obstruction, and the tissues thus affected by the interruption of circulation constitute what is known as an infarct. An aseptic embolus produces purely mechanical disturbance at the seat of lodgment and its effect is as though the vessel had been tied. Infected emboli, such as result in pyemia, are made up of fragments of infected thrombi, and when implanted in a tissue remote from the primary focus, set up independent centers of infection by the same micro-organism that was present in the original focus. Infarcts are usually wedge shaped, the apex of the wedge corresponding to the location of the embolus, and its

base made up of the tissue within the area of the ultimate branches of the obliterated vessel. Since the infected thrombus is always located primarily within a vein, in close proximity to the seat of original infection, the detached emboli are conveyed to the right side of the heart, and are apt to become impacted in the branches of the pulmonary artery. The lung, therefore, is the most common seat of metastatic abscesses. Emboli, however, may escape the filtering action of the lungs and enter the arterial system. When this occurs, they ultimately lodge in the terminal vessels of the kidneys, spleen, liver, brain, skin, etc., producing metastatic abscesses in these organs.

Causess Pyemia is invariably produced by pyogenic bacteria. In the majority of cases, infection is with the streptococcus or staphylococcus, although sometimes the gonococcus, pneumococcus, typhoid or colon bacillus are responsible. In the pre-antiseptic days pyemia was extremely common, but with present methods, it is now rarely seen in surgical practice. It occasionally occurs when wounds have been infected through faulty technique, or at the time of an accident. It is also sometimes seen in obstetrical practice, as a complication of puerperal infection. It is not uncommon as a result of suppurative osteomyelitis, appendicitis, cholecystitis, or suppuration in other deeply located structures, in which early operation is not practiced.

Symptoms: Pyemia never occurs before suppuration has taken place, and the symptoms usually do not develop until the seventh to the eleventh day after the primary infection. The premonitory symptoms consist in an altered appearance of the wound—the pus, instead of being yellow and creamy, becoming thin and streaked with blood. The granulations become pale and flabby, and frequently thrombosis may be detected in an adjacent vein. The patient loses appetite, has a general feeling of malaise, and develops a slight fever.

The first actual manifestation of pyemia is usually a chill, which is followed by a high fever, lasting several hours and terminating in a copious sweat. The temperature frequently goes to 105 or 106 degrees F., but in a few hours falls almost to normal. The peculiar characteristic of pyemia is the irregular recurrence of the chill. In acute cases sometimes there are two or three a day, increasing in fre-

quency and intensity as the disease grows worse, while in chronic cases sometimes there are only one or two a week coming at longer intervals as the disease gets better. The pulse at first is in proportion to the fever, but later continues rapid and feeble the entire time. The mental faculties are not affected. There is no apathy or indifference, and the patient fully recognizes his danger. In the latter stages of the disease, prostration may cause coma before death. There is usually loss of appetite, foul tongue, and bad breath. The urine is scanty and high colored. The skin has a marked yellow discoloration resembling jaundice. This is of hematogenous origin, and there is no bile in the urine unless an abscess develops in the gall tract or liver.

In a short while metastatic abscesses develop in various parts of the body, the symptoms depending on the organ involved. If in the lungs there will be an irritating cough, difficult breathing, and characteristic physical signs. If in the liver, there will be tenderness, enlargement of the organ, and perhaps local peritonitis. If in the spleen, there will be sudden pain, followed by swelling. If in the kidney, there will be blood and pus in the urine. If in a joint, there will be the evidences of suppurative arthritis.

Diagnosis: The diagnosis is based on the presence of a suppurating wound, on the occurrence of a chill after the expiration of the period of incubation, which recurs at irregular intervals, attended by high fever, and followed by exhaustive sweats.

Pyemia must be differentiated from malaria, typhoid fever, and various suppurative processes which give rise to localized collections of pus. It is often mistaken and treated for malaria, but a differential diagnosis can easily be made by blood examination, pyemia showing an enormous leucocytosis, and malaria exhibiting the pathognomonic plasmodium. From typhoid fever it can be differentiated clinically by a careful valuation of the symptoms, and if this is not sufficient, by recourse to laboratory methods.

Prognosis: This is based largely on the acuteness or the chronicity of the disease. Acute pyemia usually terminates fatally within five or six days. The chronic type of the disease, under proper treatment, often recovers, although relapses are frequent and the time of

convalescence is long. In many cases when recovery occurs, the patient is left with a crippled heart, on account of endocarditis.

Treatment: Pyemia, strictly speaking, is not a disease, but a sequel of suppuration. Its prophylactic treatment, therefore, consists in treating wounds so as to prevent the formation of pus. Prevent suppuration after a surgical operation, or combat it if it develops in an accidental wound, and the possibility of pyemia is absolutely eliminated.

The curative treatment of pyemia is the treatment previously given for septicemia, plus the active pursuit of metastatic abscesses, which, when accessible, should be promptly incised, evacuated, and drained.

Proceedings of Societies, Etc.

The Medical Examining Board of Virginia

Met at Murphy's Hotel, Richmond, Va., June 23, 1908, 9:30 P. M., Dr. R. W. Martin, President, presiding; Dr. R. S. Martin, Secretary and treasurer, recording.

On roll call the following other members were present: Drs. Samuel Lile, Lynchburg; W. W. Wilkinson, La Crosse; Herbert Old, Norfolk; E. T. Brady, Abingdon; E. C. Williams, Hot Springs; U. C. Stephenson, Toano; M. R. Allen, Norfolk; A. S. Priddy, Marion.

Minutes of last meeting were read and adopted. The President appointed Drs. Brady, Old and Williams a committee to consider and report on all the questions for examination. Later in the meeting the committee report was adopted.

The order of examinations was as follows:

WEDNESDAY, JUNE 24TH.

From 9 A. M. to 12 M.—Pathology, Bacteriology and Neurology.

From 12 M. to 3 P. M.—Anatomy and Embryology.

From 4 to 7 P. M.—Laryngology, Rhinology, Ophthalmology and Otolaryngology.

THURSDAY, JUNE 25TH.

From 9 A. M. to 12 M.—Materia Medica and Therapeutics.

From 12 M. to 3 P. M.—Histology, Physiology and Hygiene.

From 4 to 7 P. M.—Obstetrics, Gynecology and Pediatrics.

FRIDAY, JUNE 26TH.

From 9 A. M. to 12 M.—Chemistry, Medical Jurisprudence, and Toxicology.

From 12 M. to 3 P. M.—Surgery.

From 7 to 9 P. M.—Practice of Medicine, Etiology, and Diagnosis.

The President appointed Drs. Williams, Stephenson, and R. S. Martin Reciprocity Committee.

The following applicants for Reciprocity were reported favorably, and adopted by the Board:

Dr. E. Herbert Thompson, from West Virginia.

Dr. M. H. Price, from District of Columbia.

Dr. Wm. M. Dabney, from Maryland.

Dr. W. L. Bent, from Maryland.

Dr. S. M. Wilson from West Virginia.

Dr. Z. M. Bardin, from South Carolina.

It was also agreed to reciprocate in medical licenses with the State Board of Wyoming.

The President appointed Drs. Lile, Old and Allen Oral Examination committee. Board adjourned.

The Board met at the University College of Medicine, June 24, 6 P. M. Present, Drs. R. W. Martin, R. S. Martin, M. R. Allen, R. B. James, E. T. Brady, Herbert Old, Samuel Lile, W. B. Robinson, E. C. Williams and W. W. Wilkinson.

On motion of Dr. James, seconded by R. S. Martin, and others, Dr. E. T. Brady was elected Vice-President of the Board.

Dr. R. B. James moved that the next meeting of the Board be held in Lynchburg, Dec. 15, 16, 17, 18, 1908. Adopted. Board adjourned.

The Board met at Murphy's Hotel, June 25, 8 P. M. Present, Drs. R. W. Martin, R. S. Martin, U. C. Stephenson, R. B. James, E. C. Williams, Herbert Old, Samuel Lile, E. T. Brady, and W. W. Wilkinson.

On motion, Dr. Old was elected member of the Executive Committee.

Dr. Brady moved to pay Drs. Rodgers and Slaughter their proportionate part of the funds. Adopted. Reports of the Oral and Reciprocity Committees were then made and adopted.

A general discussion as to the manner of grading non-graduates was indulged in by several members of the Board and several resolutions were introduced, but a resolution by Dr.

Stephenson that all resolutions in regard to the subject be laid on the table prevailed.

Dr. Brady introduced the following resolution which was adopted:

Resolved: That no permit be issued to any person, who, after examination, has failed to make the prescribed average of 75 per cent. before this Board.

That a copy of this resolution be mailed to each applicant who is rejected at any examination.

That all By-laws in conflict with this resolution are hereby rescinded.

Dr. Brady then introduced the following resolution, which will be voted on at the next regular meeting of the Board:

Resolved: That in the future, a general average of 80 per cent. be required of all applicants to pass the Medical Examining Board of Virginia.

R. W. MARTIN, President.

R. S. MARTIN, Secy. and Treas.

QUESTIONS FOR EXAMINATION BY APPLICANTS FOR CERTIFICATES OF LICENSE TO PRACTICE IN VIRGINIA, DECEMBER, 1908.

Section on Practice, Etiology and Diagnosis.

Drs. E. T. Brady, Abingdon; H. U. Stephenson, Toano, and R. B. James, Danville, Examiners.

1. What conditions have pathognomonic symptoms? Mention several.
2. Distinguish between typhoid, and simple continued fevers.
3. Give the symptoms of gastric ulcer.
4. What is the condition commonly called biliousness, and to what is it due?
5. What is Asthma? To what may it be due?
6. To what symptoms do floating kidneys give rise? What remedial measures give best results?
7. How is acute enteritis recognized, and how treated?
8. Define the terms Diathesis and Cachexia.
9. What is meant by "Treating on General Principles"?
10. How would you treat (a) Psoriasis, (b) Taenia?
11. Describe the distinctive differences between the eruption of variola and varicella.
12. What is Aphasia? Distinguish between its amnesic and ataxic forms.

Section on Obstetrics, Gynecology and Pediatrics.

Dr. Herbert Old, Norfolk, Examiner.

1. When does the placenta first exist as a separate organ? describe the full term placenta and umbilical cord.
2. Give the mechanism and management during labor of a case of face presentation, chin anterior.
3. Give the preventive and curative treatment of caked breasts.

4. Give diagnosis and treatment of placenta praevia lateralis: (a) during seventh month; (b) during labor at full term.
5. Give the indications for and the technique of the operation, Trachelorrhaphy.
6. Give the causes and treatment of Dysmenorrhea in nulliparous patients.
7. Give the complications and management of Scarlet Fever in a child.
8. Write out the percentages of Fat, Sugar, Proteid, and Lime water in the following mixture:

Plain Cow's Milk.....	12 oz.
Sugar of Milk.....	1½ oz.
Lime Water.....	1½ oz.
Plain Boiled Water.....	16½ oz.

30 oz.

9. Give the signs and symptoms when an infant is getting (a) too high Fat (b) too high Sugar (c) too high Proteid.
10. Differentiate the non-infectious types of Acute Diarrhoea from those of the infectious types; give the treatment of Acute Intestinal Indigestion in an infant.

Section on Pathology, Bacteriology and Neurology.

Dr. R. M. Slaughter, Theological Seminary, Examiner.

1. Differentiate between fatty degeneration and fatty infiltration.
2. What is Amyloid degeneration; how does it begin, progress and terminate, and what is the microscopic appearance of affected organs?
3. How would you collect, and prepare for mailing, specimens of sputum, blood, urine, throat-scraping?
4. What microscopical findings confirm the diagnosis of Pulmonary Tuberculosis, and indicate the progress of the disease?
5. Name the varieties of Cancer. In what tissues is each usually found?
6. Define the terms Toxemia, Septicemia, Sepsimia and Pyemia.
7. What common troubles are produced by fungoid organisms?
8. What blood findings prove the presence and indicate the variety of malarial infection?
9. To what condition does the Amoeba Coli give rise? Describe its appearance.
10. What temporary and remote effects follow the section of a nerve?
11. What is meant by reflex nervous symptoms? How brought about?
12. What is the pathological distinction between sporadic and epidemic meningitis?

Section on Therapeutics.

Dr. W. W. Wilkinson, La Crosse, Examiner.

1. Describe the therapeutic uses of Arsenic.
2. Describe the therapeutic uses of Belladonna.
3. State the therapy of typhoid fever treatment.
4. Give the therapeutic uses of (a) Gelsemium, (b) Salol, (c) Creosote.
5. State therapeutic application of drugs in treatment of acute Nephritis.

6. Name some remedies used for Tonsilitis, Asthma, Tetanus.

Write the following prescription correctly:

R	Hgcl2	MII	(.30)
	nitro-Mur acid Dil.	℥VIII	(64.00)
	Tr. Chlo fer	℥fSS	(22.50)
	Sol chlo ars. aa	℥SS	(8.00)
	Syr Ging.	℥I	(24.00)
	ess pepsin ad. sp	℥fVI	(210.00)

Sig. One 3 half hour before each meal.

Section on Materia Medica.

Dr. W. B. Robinson, Tappahannock, Examiner.

1. What is the physiologic action of ipecac in doses of gr. $\frac{1}{8}$ — $\frac{1}{4}$, and in doses of gr. v—xx? Name its principle.
2. How do Strophanthus and Digitalis differ in physiologic action?
3. What is the source of Ichthyol, and what are its physiologic effects?
4. What is the effect of full doses of Opium on the respiration? What on the secretions? Name the alkaloids of Opium and give dose of each.
5. Name, with dose of each, the preparations of the Chlorides and the Iodides of Mercury. Give the symptoms of hydrargyrim.
6. Of what is sparteine an alkaloid? Describe its physiologic action.

Section on Laryngology, Rhinology, Ophthalmology and Otology.

Drs. A. S. Priddy, Marion, Chairman; E. C. Williams, Hot Springs, and Herbert Old, Norfolk. Examiners.

Laryngology.

1. Give etiology, diagnosis and treatment of Pseudo-membranous Laryngitis or True Croup.
2. Give etiology, symptoms, frequent complications and terminations of acute tonsilitis.
3. Define Hay Fever, give causes and pathological conditions usually found associated with it.

Rhinology.

1. Give etiology, symptoms and treatment of Acute Rhinitis.
2. What structures adjacent to the nasal cavities may become involved in the diseased conditions of them?

Ophthalmology.

1. Give the etiology, symptoms and general and local treatment of Trachoma.
2. Define Hypermetropia, Myopia, Astigmatism, Blepharitis, Ciliaris and Scleritis.
3. To what conditions are the eyes of children of the different ages often exposed, the neglect of which may cause impairment or loss of vision?

Otology.

1. Give the cause, prognosis and treatment of Suppurative inflammation of the middle ear.
2. Define and give the causes of Tinnitus Aurium and its symptomatic importance from respective causes.

Section on Physiology, Hygiene and Histology. Physiology.

Robert C. Randolph, M. D., Boyce, Examiner.

Physiology.

1. Describe the processes of Osmosis and Diapedesis and give examples of each in the human body.
2. State the manner in which the blood circulates through the heart and lungs, beginning at the right auricle.
3. What prevents the digestion of the stomach by its own juices?
4. What is the action of the gastric juice on Carbohydrates and Fats?
5. Give the metabolism of (a) Proteids, (b) Carbohydrates and (c) Fats.
6. What would be the effect of paralysis of the seventh cranial nerve on the right side?

Hygiene.

1. If a chemical analysis of drinking water revealed the presence of Nitrites and Nitrates, would this condemn it for drinking purposes? If so, why?
2. What is sewer gas? How does its inhalation in considerable quantities affect the system?
3. What is the Trichina Spiralis and what are its effects on the human system?

Histology.

1. Name and describe the salivary glands.
2. Describe the cardiac end of the stomach.

Section on Surgery.

Drs. Samuel Lile, Lynchburg, Chairman; E. T. Brody, Abingdon, and R. M. Slaughter, Theological Seminary, Examiners.

1. What is Phlebitis, what its causes, and how treated?
2. Give diagnosis and treatment of Syphilis, (Chancere) especially as to when to begin treatment.
3. Differentiate Tabes Mesenterica, and Abdominal Aneurism (aortic).
4. Give treatment of Gunshot wounds of pleura and abdomen.
5. Name the different forms of Talipes, give causes and treatment.
6. What is Coccygodynia, its cause and treatment?
7. Give the usual after-treatment of abdominal operations.
8. What is Pyloric Stenosis, its causes and Surgical treatment?

Section on Chemistry, Toxicology and Medical Jurisprudence.

Drs. R. B. James, Danville; A. S. Priddy, Marion, and E. C. Williams, Hot Springs, Examiners.

Chemistry.

1. What is an Atom? A Molecule? An Element? A Compound?
2. What is Hydrogen? How does it occur in nature? Give two methods of preparing it.
3. How is Carbon Dioxide made? How may it be converted into Carbon Monoxide? What effect does inhaling Carbon Monoxide have on an animal?

4. What is the Chemical and therapeutic difference between Ethyl Alcohol; Methyl Alcohol; and Denatured Alcohol?
5. Show by Chemical formula what reaction takes place when Sulphuric Acid is brought in contact with metallic Zinc; when Hydro Chloric Acid and marble are brought together.
6. What is lime? To what property does Bleaching powder owe its powers as deodorizer and disinfectant? How is it made?

Toxicology.

1. Give symptoms and treatment of Hydrocyanic poisoning.
2. A patient taking the Iodides will develop symptoms of what poison if a local application of mercury is made to an absorbing surface of same patient?
3. Give symptoms and treatment of Atropia poisoning.

Medical Jurisprudence.

1. What is meant by Medical Jurisprudence?
2. Give details of method of preserving a stomach to be sent for chemical analysis?
3. Give some reliable signs of death.

Section on Anatomy.

Dr. H. U. Stephenson, Toano, Examiner.

BONES.

1. Describe the Os Innominatum.
2. Describe the Inferior Maxilla and give the attachment of its ligaments.

MUSCLES.

3. Give origin and insertion of Flexor Sublimis Digitorum.
4. Bound the Axillary Space and mention its contents.

VISCERA.

5. Describe the Pleura and its reflexions.
6. Describe the Pancreas.

ARTERIES AND NERVES.

7. Describe the Radial Artery, give its branches.
8. Give the deep origin of the Pneumogastric nerve. What organs does it supply?

VEINS.

9. Name the great veins which have no valves.
10. What veins form the Portal vein, and where is it situated?

EMBRYOLOGY.

11. What are the Wolffian bodies?
12. What changes take place in the vascular system at birth?

Alphabetically arranged list of Applicants for License to practice Medicine, Surgery, etc., who passed satisfactory examinations before the Medical Examining Board of Virginia, during its session, June 23-26, 1908, held in Richmond, Va.

Anderson, Chas. R., Rockenaw Springs, Va., Univ. of Va., 1908.
 Adair, T., Lexington, Va., Jefferson Med. Coll., 1908.
 Avery, Fred. S., Washington, D. C., Geo. Washington Univ., 1908.
 Brady, H. A., Wytheville, Va., Med. Coll. of Va., 1908.
 Benedict, S. R., Athens, Ga., Univ. Coll. of Med., 1908.

Burke, Thos. G., Richmond, Va., Alabama Med. Coll., 1908.
 Bundy, W. E., Belfast Mills, Va., Univ. Coll. of Med., 1908.
 Brent, W. L., Colonial Beach, Va., Univ. of Maryland, 1906.
 Butler, Arthur R., Newington, Va., Columbian Univ., 1899.
 Berkeley, G. R., Norfolk, Va., Jefferson Med. Coll., 1906.
 Brown, Wm. E., Penn Laird, Va., Baltimore Med. Coll., 1908.
 Booker, L. S., Richmond, Va., Univ. Coll. of Med., 1908.
 Blair, J. R., Churchville, Va., Univ. Coll. of Med., 1908.
 Bardin, Z. M., Norfolk, Va., Med. Coll. of S. C., 1905.
 Ballou, J. L., Crumpler, N. C., Jefferson Med. Coll., 1907.
 Carr, W. D., Richmond, Va., Univ. Coll. of Med., 1908.
 Collins, C. R. S., Norfolk, Va., Leonard Med. Coll., 1908.
 Cumber, W. A., Richmond, Va., Leonard Med. Coll., 1907.
 Christian, D. A., Jr., Vera, Va., Medical Coll. of Va., 1908.
 Cobbs, W. H., Martinsville, Va., Medical Coll. of Va., 1908.
 Campbell, G. E., Mohawk, W. Va., Univ. of Nashville, 1908.
 Cowles, W. L., Norfolk, Va., Med. College of Va., 1908.
 Chaote, B. O., Sparta, N. C., Med. Coll. of Va., 1908.
 Crawford, Geo. D., Strasburg, Va., Univ. of Va., 1907.
 Catts, S. R., Alexandria, Va., Baltimore Med. Coll., 1906.
 Deboe, Body Camp, Va., Univ. Coll. of Med., 1908.
 Doyle, M. P., Norfolk, Va., Med. Coll. of Va., 1907.
 Dabney, Wm. M., Baltimore, Md., Univ. of Va., 1896.
 Ezekiel, G. A., Richmond, Va., Med. Coll. of Va., 1908.
 Eggleston, E. C., Richmond, Va., Univ. Coll. of Med., 1908.
 Ellis, S. B., Wakefield, Va., Med. Coll. of Va., 1908.
 File, Norman W., Ransons, Va., Baltimore Med. Coll., 1908.
 Fletcher, O. W., Portsmouth, Va., Univ. of Maryland, 1908.
 Garrenton, Cecil, Coinjock, N. C., Med. Coll. of Va., 1908.
 Givens, F. S., Newport, Va., Univ. Coll. of Med., 1908.
 Gill, T. F., Garisonville, Va., Univ. Coll. of Med., 1908.
 Hankins, J. P., Sandy River, Va., Med. Coll. of Va., 1908.
 Hedrick, O. E., Museville, Va., Univ. Coll. of Med., 1908.
 Hoskins, H. F., Richmond, Va., Med. Coll. of Va., 1908.
 Hubbard, J. F., Richmond, Va., Univ. Coll. of Med., 1908.
 Hoge, A. H., Hoge's Store, Va., Univ. Coll. of Med., 1908.
 Horsley, T. M., Lovingsston, Va., Med. Coll. of Va., 1908.
 Irby, M. R., Vonaty, Va., Jefferson Med. Coll., 1908.
 Junger, M., Ironville, Va., Univ. Cracov., Austria, 1899.

- Knight, J. E., Fredericksburg, Va., Med. Coll. of Va., 1908.
- Kennon, Wm. G., Bascobel, Va., Univ. of Pa., 1908.
- Leake, Josiah, Ashland, Va., Univ. Coll. of Med., 1908.
- Lake, Norman P., Rectortown, Va., Univ. of Va., 1908.
- Long, T. W. M., Garysburg, N. C., Univ. Coll. of Med., 1908.
- Massey, S. E., Fort Mill, S. C., Med. Coll. of Va., 1908.
- Martin, B. H., Richmond, Va., Med. Coll. of Va., 1908.
- McCulloch, J. H., Henderson, W. Va., Univ. Coll. of Med., 1908.
- McClelland, J. D., Wright, W. Va., Med. Coll. of Va., 1908.
- Martin, C. G., Mendota, Va., Hospital Coll. of Med., 1907.
- Moore, Geo. E., Farmville, Va., Howard Univ., 1907.
- McDowell, W., Richmond, Va., Med. Coll. of Va., 1908.
- Moormaw, J. H., Hale Ford, Va., Med. Coll. of Va., 1908.
- Morrison, E. H., Danville, Va., Med. Coll. of Va., 1908.
- Nuckols, E. B., Norfolk, Va., Med. Coll. of Va., 1908.
- Newman, Myron A., Norfolk, Va., Hahneman Med. Coll., 1906.
- Owen, A. M., Sycamore, Va., Univ. Coll. of Med., 1908.
- O'Kafer, Oswald, Newbern, N. C., Univ. of Maryland, 1905.
- Pendleton, Edward, Richmond, Va., Louisville Med. Coll., 1897.
- Price, M. H., Washington, D. C., Columbian Univ., 1903.
- Page, H. N., Norfolk, Va., Univ. of Va., 1905.
- Preston, R. S., Wytheville, Va., Johns Hopkins Univ., 1908.
- Rea, Parker, Petersburg, Va., Univ. Coll. of Med., 1908.
- Phillips, B. L., Beaver Dam, Va., Univ. Coll. of Med., 1908.
- Phillips, B. L., Beaver Dam, Va., Univ. Coll. of Med., 1908.
- Pendleton, E. B., Cuckoo, Va., Univ. Coll. of Med., 1908.
- Rosebro, B. M., Richmond, Va., Med. Coll. of Va., 1908.
- Russell, T. H., New York, Jefferson Med. Coll., 1908.
- Roberts, S. P., Rockport, W. Va., Univ. Coll. of Med., 1901.
- Rawls, D. L., Holland, Va., Univ. Coll. of Med., 1908.
- Register, E. C., Richmond, Va., Med. Coll. of Va., 1908.
- Royster, T. H., Virgilina, Va., Univ. Coll. of Med., 1908.
- Swimley, A. C., Winchester, Va., Univ. Coll. of Med., 1908.
- Skaggs, G. W., Ballard, W. Va., Med. Coll. of Va., 1908.
- Sager, W. B., Woodstock, Va., Jefferson Med. Coll., 1908.
- Sterrett, J. R., Richmond, Va., Univ. Coll. of Med., 1908.
- Surratt, J. W., Sylvatus, Va., Med. Coll. of Va., 1908.
- Smith, Lucian C., Washington, D. C., Geo. Washington Univ., 1905.
- Stafford, W. W., Elizabeth City, N. C., Univ. Coll. of Med., 1908.
- Scott, F. G., Jr., Richmond, Va., Med. Coll. of Va., 1908.
- Shacklette, J. R., Stafford's Store, Va., Univ. Coll. of Med., 1908.
- Sutherland, T. C., Tiny, Va., Univ. Coll. of Med., 1908.
- Saunders, A. M., Richmond, Va., Univ. Coll. of Med., 1908.
- Simmons, F. G., Richmond, Va., Vanderbilt Univ., 1890.
- Smith, A. T., Richmond, Va., Med. Coll. of Va., 1908.
- Thompson, J. H., Richmond, Va., Univ. Coll. of Med., 1908.
- Tharpe, T. D., Harrisonburg, Va., Howard Univ., 1904.
- Twyman, T. B., Locust Dale, Va., Med. Coll. of Va., 1908.
- Tanner, E. M., Gaines' Mill, Va., Med. Coll. of Va., 1908.
- Thompson, E. H., Bluefield, W. Va., Maryland Med. Coll., 1905.
- Tunstall, J. L., Henderson, N. C., Univ. Coll. of Med., 1907.
- Tyree, J. A., Danville, Va., Med. Coll. of Va., 1908.
- Upshur, Alfred P., Richmond, Va., Univ. Coll. of Med., 1908.
- White, Harry F., Norfolk, Va., Univ. Coll. of Med., 1908.
- Wilson, S. R., Farmville, Va., Leonard Med. Coll., 1907.
- Wilson, F. D., South Norfolk, Va., Univ. of Maryland, 1908.
- Wilson, S. M., Petersburg, Va., Univ. Coll. of Med., 1907.
- Woolwine, C. R., Red House, Va., Med. Coll. of Va., 1908.
- Wiley, W. S., Georgel, Va., Baltimore Med. Coll., 1905.
- White, H. Fitzhugh, Staunton, Va., Univ. Coll. of Med., 1908.
- Walker, L. D., Cedar Keys, Florida, Med. Col. Va., 1908.
- Wallace, W. R., Richmond, Va., Med. Coll. of Va., 1908.
- *Yeatts, W. C., Blaine, W. Va., non-graduate.

*Registered before law passed requiring all to be graduates before passing the Board.

INSTITUTIONS REPRESENTED BY APPLICANTS WHO CAME BEFORE THE MEDICAL EXAMINING BOARD OF VIRGINIA, SPRING SESSION, AT RICHMOND, VA. June 23-26, 1908.					Total Number of Applicants from each College.	Total Number of Applicants Licensed from each College.	Total Number of Applicants Rejected from each College.	Partial Examination.	Incomplete or Withdrew
College Physicians and Surgeons, Baltimore.....	1				1				
University College Medicine.....	35	31			31				1
Medical College of Virginia.....	35	32			32		2		1
Howard University.....	2	2			2				
Jefferson Medical College.....	6	6			6				
Leonard Medical College.....	8	3			3		5		
Louisville Medical College.....	2	1			1		1		
Meharry Medical College.....	1						1		
Alabama Medical College.....	1								
Vanderbilt University.....	1	1			1				
University of Maryland.....	5	5			5				
College of Physicians and Surgeons, Keokuk Iowa.....	1						1		
Maryland Medical College.....	2	1			1				1
University of Nashville.....	1	1			1				
College Physicians and Surgeons, St. Louis.....	1						1		
Tennessee Medical College.....	2						2		
George Washington University (Columbian).....	4	4			4				
Kentucky School Medicine.....	2						1		1
Baltimore Medical College.....	6						2		
Hospital College Medicine.....	2	1			1		1		
University of Cracav, Austria.....	1	1			1				
Illinois Medical College.....	1								
Medico Chirur. College Christ Inst.....	1						1		
University of Virginia.....	8	4			4		1		1
National Medical College.....	1						1		
College of Physicians and Surgeons, Boston.....	1						1		
University of South.....	3						3		
*Non-Graduate Passed.....	1	1			1				
Johns Hopkins University.....	1	1			1				
University of Louisville.....	1								
Hahnemann Medical College.....	1	1			1				
Massachusetts School Osteopathy.....	1						1		
Medical College South Carolina.....	2	1			1		1		
Bennett Medical College.....	1						1		
University of Pennsylvania.....	1	1			1				
Non-Graduates.....	58							58	
Totals.....	201	106			31		58		6

*Registered before law requiring all to be graduates.

Nos. of examination papers.	LIST OF INSTITUTIONS Whose Graduates were Rejected by the Medical Examining Board of Va., SPRING SESSION, June 26, 1908. With Percentage Marks of each.											
	COLLEGE OF GRADUATION.											
	YEAR.	Laryng., Rhinol., Ophthalm. & Otology.	Chemistry, Toxicol., & Medical Juris.	Anatomy & Embry- ology.	Physiology, Hygiene & Histology.	Pathology, Bacteriolo- gy & Neurology.	Obstetrics, Gynecolo- gy & Pediatrics.	Materia Medica & Therapeutics.	Practice, Etiology & Diagnosis.	Surgery.	Total.	Average.
1	Physicians and Surgeons, Baltimore	1901	Oral	Exa	mina	tion						
28	Leonard Medical College	1908	80	90	79	70	60	75	75	60	75	50
29	Leonard Medical College	1908	75	75	76	66	68	75	79	64	50	73
30	Leonard Medical College	1908	74	75	82	70	45	67	76.5	65	68	69
32	Leonard Medical College	1908	74	75	75	81	40	60.5	67.5	65	40	578
49	Physicians and Surgeons, Keokuk, Iowa	1884	Oral	Exa	mina	tion						64
63	Tennessee Medical College	1907	82	78	70	83	60	80	74	77	65	669
78	Baltimore Medical College	1907	75	80	75	63	60	75	72.5	68	55	623.5
108	University of Virginia.....	1905	82	90	72	67	66	65	72.5	70.5	75	660
113	National Medical College	1900	Oral	Exa	mina	tion						73
118	Physicians and Surgeons, Boston.....	1907	56	83	64	35	15	67	65	75	30	522
158	Medical College Virginia	1908	62	70	75	83	62	79.5	70	80	70	651.5
165	Medical College Virginia	1908	75	75	76	83	60	68.5	72.5	81	70	661
166	Tennessee Medical College	1908	72	75	77	75	77	75	81	77	30	637
177	University of Louisville.....	1902	Oral	Exa	mina	tion						70
173	Mass. Coll. Osteop.....	1907	66	85	70	66	56	59				60
175	University of South.....	1907	Oral	Exa	mina	tion						62
185	Med cal College South Carolina.....	1901	Oral	Exa	mina	tion						60
190	Bennett Medical College	1884	Oral	Exa	mina	tion						66.5
191	University of South	1906	81	90	68	65	63	72	81	72	68	662
198	Louisville Medical College	1898	Oral	Exa	mina	tion						73
199	Kentucky School Medical	1894	Oral	Exa	mina	tion						10
200	Physicians and Surgeons, St. Louis.....	1891	Oral	Exa	mina	tion						40
147	University of Virginia.....	1907	75	75	80	65	70	82	70	75	75	667
144	*University of Virginia.....	1907	90	85	76	89	71	81	79	80	80	681

*Made less than 45 per cent. on Surgery (45 per cent. minimum.)

**INSTITUTIONS REPRESENTED BY THE
APPLICANTS BEFORE THE
MEDICAL EXAMINING BOARD OF
VIRGINIA,
FROM THE ORGANIZATION OF THE BOARD,
JANUARY 1, 1885, to JUNE 23, 1908.**

	Total Number from each Institution.	Total Number Licensed First Examination.	Total Number Rejected First Examination.	Licensed on Second Examination.	Rejected Second Examination.	Licensed Third Examination.	Rejected Third Examination.	Licensed Fourth Examination.	Rejected Fourth Examination.	Licensed Fifth Examination.	Rejected Fifth Examination.	Rejected Sixth Examination.	Rejected Seventh Examination.	Incomplete or Withdraw.	Partial examination.
Total number before board from organization to June 23, 1908	3517	1925	618	218	122	45	46	7	29	4	4	1	..	56	717
College Physicians and Surgeons, Baltimore.	1	..	1	..	..	..	..	..	..	..	..	..	..	1	1
University College of Medicine	35	34	..	..	..	..	..	..	..	..	..	..	..	..	..
Medical College of Virginia	35	32	..	..	..	..	..	..	..	..	..	..	..	..	..
Howard University.	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Jefferson Medical College.	6	6	..	..	..	..	..	..	..	..	..	..	..	..	..
Leonard Medical College.	8	12	..	1	..	..	1	..	..	..	1	..	..	..	..
Louisville Medical College.	2	1	..	1	..	..	..	..	..	..	..	..	..	..	..
Meharry Medical College.	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..
Alabama Medical College.	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Vanderbilt University.	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
University of Maryland.	5	5	..	..	..	..	..	..	..	..	..	..	..	..	..
College Physician and Surgeons Kesokuk Iowa.	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Maryland Medical College.	2	1	..	..	..	..	..	..	..	..	..	..	..	1	1
University of Nashville.	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
College Physicians and Surgeons, St. Louis.	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Tennessee Medical College.	2	..	1	..	1	..	..	..	..	..	..	..	..	..	..
George Washington University (Columbia)	4	4	..	..	..	..	..	..	..	..	..	..	..	..	..
Kentucky School of Medicine.	2	..	1	..	..	..	..	..	..	..	..	..	..	1	1
Baltimore Medical College.	6	3	..	1	2	..	..	..	..	..	..	..	..	..	..
Hospital College Medicine.	2	1	..	..	..	..	..	1	..	..	..	..	..	..	..
University of Cracay, Austria	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Illinois Medical College	1	..	..	..	..	..	..	..	..	..	..	..	..	1	1
Medico Chirur. College, Christ Institute.	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..
University of Virginia.	8	4	1	..	2	..	..	..	..	..	..	..	..	1	1
National Medical College	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..
College Physicians and Surgeons, Boston	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
University of South.	3	..	..	..	2	..	..	..	1	..	..	..	..	..	..
*Non-Graduate Passed.	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..
Johns Hopkins University.	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
University of Louisville.	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Hahnemann Medical College.	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Massachusetts School Osteopathy.	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Medical College of South Carolina.	2	1	1	..	..	..	..	..	..	..	..	..	..	..	..
Bennett Medical College	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..
University of Pennsylvania	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Non-Graduates taking partial Examination.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58
Totals	3669	2027	631	221	131	45	47	8	32	4	5	1	1	62	775

*Registered before law requiring all to be graduates.

Nos. of examination papers.	INSTITUTIONS Whose Graduates were Rejected by the Medical Examining Board of Va., AT REGULAR SPRING MEETING, June 23-26, 1908. With Percentage Marks of each.													
	COLLEGE OF GRADUATION.													
	YEAR.	Hygiene and Med. Jurisprudence.	Chemistry.	Anatomy.	Physiology.	Histology, Pathology, Bacteriology.	Obstetrics and Gynecology.	Materia Medica and Therapeutics.	Practice.	Surgery.	Total.	Average.		
33	Meharry Medical College.	1905	75	75	79	85	65	82	74	77	40	652	72	72
93	Med. Chir. College, Christ Inst.	1904	82	85	76	75	65	76.5	75	78	40	652.5	72	72
96	Leonard Medical College.	1906	78	70	83	89	70	70	69	20	626	69	69	69
111	Baltimore Medical College.	1907	..	75	81	60	60	75	73	79.5	65	568.5	71	71
143	Hospital College of Medicine	1904	92	70	75	68	68	66	70.5	73	75	657.5	73	73
127	University of South.	1907	78	80	66	70	65	77	69	75	60	640	71	71

Book Notices.

Medical Gynecology. By SAMUEL WYLLIS BANDLER, M. D., Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital, etc. With original illustrations. Philadelphia and London. W. B. Saunders Co. 1908. 8vo. 676 pages. Cloth, \$5.00; Morocco, \$6.50.

It would seem that there is a surfeit of works on *surgical gynecology*; but so many of the diseases and conditions can be relieved by *medical gynecology* that we are surprised that so few books of modern years are devoted to this aspect. The author, of course, recognizes that many conditions need surgery, but that many of the diseases of women can be successfully treated medically and by local measures is well proven. It is to these latter matters that this book is chiefly devoted. They are treated of in such a practical way as to make this book of daily service to the general practitioner. Gynecological examinations and methods employed in medical treatment are described in much detail. Much space is given to associated nervous conditions as met with in gynecological practice. Diseases of deeper structures are described, and some of the severer forms of disease, such as cancer, etc., naturally go into the hand of the surgeon. A good index is appended.

Pulmonary Tuberculosis and Its Complications. By SHERMAN G. BONNEY, A. M., M. D., Professor of Medicine, Denver and Gross College of Medicine, etc. With 189 original illustrations, including 20 in colors and 60 X-ray photographs. Philadelphia and London. W. B. Saunders Co. 1908. 8vo. 778 pages. Cloth, \$7.00 net; half Morocco, \$8.50 net.

Pulmonary tuberculosis is a disease of such every day occurrence, and so fatal unless early recognized and proper treatment instituted, that any book which may throw light on the subject must be in demand. The completeness of this treatise may be understood when the reader is informed that it contains 100 chapters. In short every phase of the disease is considered—from its beginning to its ending. Symptomatology and diagnosis are fully dealt with, including bacteriology, of course. Treatment of the various complications forms a prominent feature. Forced feeding, with certain contra-indications, is urged. Out of door, sunshiny life—as living in tents, or porches, etc., is insisted on. The author's experience teaches that the administra-

tion of bacilli emulsions is valuable in some cases of long standing afebrile type, but in some cases the remedy is injurious. In cases of severe mixed infection, with high temperatures, it is highly inexpedient to attempt the production of an increased tuberculo-opsonic power until after amelioration of secondary infection. Bacterial vaccines, derived from the secretions of the patient are often indicated when there are constitutional and bacteriologic evidences of mixed infection. Despite the uncertainties of action of autogenetic vaccines, their employment is justified in desperate cases. The space allowable to a book notice cannot give full justice to the merits of this volume.

Editorial.

Medical Society of Virginia.

The Program of the Thirty-Ninth Annual Session of this State Medical Society, to be held at Richmond, October 20-23, 1908, has just been issued. Notwithstanding the number of titles of papers that were withdrawn by authors because they could not foresee any opportunity for their presentation to the session, there are yet sixty-two printed titles. Such a list of papers, with the discussions on them, will necessitate the division of the Society into at least two sections—a Medical and a Surgical. During the 1907 session, even thirty papers were on the Program; but with all the expeditious rulings of the Chair possible, some of these had to be read simply by titles and referred to the Committee on Publications of the *Transactions*. The approaching session promises to be the largest in attendance ever held, and a most excellent scientific one.

Typhoid Fever.

With all our boasted advances in medicine, and with all the powers granted to Boards of Health in abating nuisances of all kinds, the usual late Summer and Fall endemics of typhoid fever are occurring all over the country. This year, in certain sections of our own State, endemics are heard of which appear to be a little more than usually virulent. Of course, many individual cases can be easily accounted for; but in others they seem to be guess work to satisfy a theory. The causes, when found, do not seem to be recognized until after the disease has claimed its victims. Many of the cases, too,

are in persons who think they have been careful as to their food and drinks, and who are apparently cleanly in their habits.

That typhoid fever is distinctively an infectious disease all will admit, as also that the infection enters the body most generally through the mouth. But inspectors of meats, vegetables, other foods and drinks have not yet become generally able to say in advance that the infectious germ is in this or that specific source until after the disease has broken out. They count cases that drank water from such and such a spring or well in whom typhoid developed; and *then* they condemn such a source of water supply; but *then* it is too late.

• It is not improbable that there is a timely recognizable condition of house surroundings, water supplies, etc., which might be discovered, if competently detailed commissions, commensurately salaried to save themselves from all financial embarrassment, were put to work on this matter. If neither the State nor National Government will primarily undertake such a thing, then some of the accumulating resources of the American Medical Association might be well used in the investigation—instead of leaving the discoveries to be made to haphazard individual effort—however earnest these individuals may be in their desires and efforts to find out. The same may be said of tuberculosis and other destroyers of the human race; and the results would probably prove life-saving. A local health officer has not the means at his command to do much original investigation. He has his hands full in executing the health laws of his State or community as they are. But genuine, original, investigative work is what is needed, and such can scarcely be undertaken by individual doctors.

We do not attempt to lay out any definite line of co-operative investigation. That should be determined by the Commission suggested. But with the many advances in medicine already made we are satisfied that properly co-operative effort would be productive of discoveries and good results. As soon as States could see earnestness in such an effort, there can be no question but that they would come to the help of such Commissions with sufficient laws and financial help, if needed.

Virginia Medical Institutions.

The University College of Medicine, Richmond, has opened its sixteenth session most flatteringly. It is growing in popularity throughout the

entire country—North and South. Students are attracted by the reputation of faculties. This College is maintaining a high standard of admission—as shown by the refusal to matriculate some this year who will have to go elsewhere. Its scientific course of instruction is thorough. It was feared by some that this policy—wise and praiseworthy as it is—would be too far in advance to meet with immediate popular approval, and might prove a hindrance to its work, but it is gratifying to learn that the response of the profession and the public has been prompt and favorable and hearty. There is no reason why the South should not have here one of the leading medical colleges of the country. The profession and the people manifest their readiness in sustaining it in all its progressive steps.

The Medical College of Virginia has opened its present session encouragingly. It has a number of able teachers in its faculty, and many facilities for good educational work.

The Medical Department of the University of Virginia has long years ago established for itself a most enviable reputation for thoroughness of its didactic and laboratory teaching; and in recent years, new blood has been infused in the faculty which makes it also a good clinical institution. Its graduates stand well wherever they locate.

Antikamnia Chemical Company.

This company, finding their present site inadequate for the increasing demands of its product, is about to erect a five-story and basement building in St. Louis, with a ground area of 87 by 109 feet, and will be a modern structure in every detail. When this building is erected it is their purpose to remodel their present building, increasing its capacity in keeping with the constantly growing need for more room for its various manufactures.

Obituary Record.

Dr. Jacob Prosser Harrison

Died suddenly, September 20, 1908, in the city of Richmond. He was born 1834. During the Civil War, he served as surgeon in the hospitals of Richmond. His health had not been good for some time before his death. He had only recently returned from a visit to his son, Dr. J. Prosser Harrison, of Newport News, Virginia.

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Original Communications.

TUBERCULOSIS OF THE BLADDER.*

By DR. WILHELM KARO, Berlin, Germany.

I highly appreciate the honor of addressing your society; in fact, I consider it a privilege to do so.

In view of the great interest which the International Congress on Tuberculosis has naturally awakened, I feel called upon to broach this subject before you this evening. As a specialist in genito-urinary diseases, I have purposely chosen "Tuberculosis of the Bladder" as the theme of my lecture, because in the last few years a great change has taken place in its recognition and consequent treatment.

Nowadays, tuberculosis of the bladder is considered not a separate, isolated disease, but a symptom of a tubercular affection of the genito-urinary organs; just as in some cases, we may recognize tubercular laryngitis as a symptom of phthisis. Formerly, tuberculosis of the bladder was supposed to be an ascending process; accordingly, tuberculosis of the bladder, and still more, that of the kidneys, was considered an incurable disease; and the medical profession stood helpless before it. So the well known surgeon Albert, of Vienna, only thirteen years ago wrote, "I mention nephrectomy as a warning mistake of the times; physicians have been found to undertake this operation, and one case was reported to have been successful."

As a decided contrast to this statement, we now positively know that the bladder in nearly all cases of tuberculosis is infected by the kidneys; in very rare cases, the primary seat of tuberculosis is in the genital organs, and thence reaches the bladder.

The question, whether there is a primary isolated tuberculosis of the bladder, can hardly

be avoided from a clinical standpoint. To answer this question in the affirmative, it would be necessary to prove that all other organs, especially the genito-urinary organs, are not affected by tuberculosis. That such a supposition is impossible, we know from the clinical facts we have learned in the study of tuberculosis of the kidneys. We know that in spite of increasing weight, in spite of apparent best of health, and in spite of a urine clear and free from albumin, tuberculosis may spread in one kidney and toxically affect the other.

For this reason, a positive conclusion of this difficult question cannot be obtained even by double ureteral catheterization. On the other hand, catheterization of the ureters has proved that in nearly every case of tuberculous pyuria the source of the pus is located in the kidneys. Out of more than a hundred cases of tuberculosis of the urinary organs which I have observed in the last seven years in the clinic of Professor Casper, there have been but two in which we got, through double ureteral catheterization from both kidneys, urine clear and free from albumen without leucocytes. But, as mentioned before, this fact being no test of the integrity of the kidneys, these two cases cannot in any way serve as an argument in question; the more so, since no search for tubercle bacilli in the urine, gotten through ureteral catheterization had been made. We, therefore, cannot be sure whether even in these two cases, tuberculosis had not originated in the kidneys.

In deciding this important question, only such cases can be taken into consideration in which clear urine is secreted, and, at the same time, our modern methods of functional examination would prove the kidneys to be perfectly sound. In the two cases mentioned above, renal function had not been tested. For these reasons and on the basis of my experience, I should like to emphasize the fact that I have not met with a single case where an absolutely convince-

*Read by invitation before the Richmond Academy of Medicine and Surgery, September 22, 1908.

ing proof of a primary tuberculosis of the bladder has been established.

In order to avoid becoming tiresome, I will not enlarge on the pathological anatomy portion of the disease. I only wish to state that we must distinguish between real tuberculosis of the bladder, which, as you know, keeps pace with the origin and development of the miliary tubercle, and tubercular cystitis. From a clinical standpoint, the localization of these changes is of paramount importance, for from it, especially in fresh cases, we recognize the mode of infection; for instance, in a case of tuberculosis of the right kidney, we find characteristic changes around the right ureteral opening. The longer the disease lasts, the more indistinct the original localization becomes, and the more extensive will be the parts affected. Exceptions to this rule are, of course, possible. The most advanced stages of renal tuberculosis exceptionally present no pathological changes of the bladder.

As regards the symptoms of tuberculosis of the bladder, they do not necessarily differ much from those found in other diseases of the urinary organs; hence, I will not mention dysuria in the most various degrees, pyuria and hematuria. It cannot be too strongly accentuated that the persistence of any of these symptoms must at once arouse the suspicion as to the existence of tubercular affection of the urinary organs.

It would be a fatal mistake to be deceived by an apparently strong constitution and healthy look, and therefore, to look upon the dysuria in such cases as a symptom of a simple chronic cystitis. As an illustration of this, I will mention a single case.

An apparently healthy man, thirty-six years of age, had been treated for "gonorrheal cystitis" a year before consulting me. The case became worse and worse, and the patient was obliged to pass water nearly every twenty minutes. I made a cystoscopic examination, and found the left side of the bladder, around the left ureteral opening very much inflamed; the ureter itself ulcerated, while the right part of the bladder and the right ureteral opening were in a healthy condition. By ureter-catheterism we got from the left kidney purulent urine containing tubercle bacilli; the urine of the right kidney was clear, without microscopical cells. We, therefore, removed the left kidney, and found it totally tuberculous. The patient then

recovered very rapidly; and two weeks after operation, the urine was perfectly clear, micturition had become normal, and all pain on passing water had disappeared. I happened to see the patient about six weeks ago. He had gained sixty pounds in weight; his urine was normal, and the bladder, by cystoscopic examination, was found in perfect health.

I mention this as an illustration of a number of similar cases, in order to show that in all cases of chronic pyuria, we must not be deceived by apparent health, or increasing weight, but must always consider the possibility of tuberculosis, and examine the urine for tubercle bacilli. By careful examination we are pretty sure to find in nearly every case tubercle bacilli on cover slip preparations from centrifugized urine.

For safety's sake, it may be advisable to examine the whole urine collected within twenty-four hours. An expert eye will never confound the tubercle with the smegma bacillus which differs both in shape and relative position in the preparation. If no tubercle bacilli are found, a guinea pig should be inoculated with the urine according to the procedure recommended by Bloch. Within fourteen days we can then tell whether or not the urine contains the bacilli. Should this test show that no bacilli are present, it would by no means prove that the disease is not a tuberculous one.

I can only imply that in all such cases we must bear in mind that the diseased ureter may temporarily have been obliterated, and the urine contained come from the healthy kidney. Be that as it may, whether bacilli have been found or not, whenever the case arouses the suspicion of tuberculosis of the genital tract it is always our duty to confirm the diagnosis with the aid of the cystoscope. Not for a moment do we hesitate to stigmatize the omission of cystoscopy in such cases as a gross and fatal mistake. I must, however, add that all such examinations should be undertaken with the utmost delicacy and care because the consequences may prove very dangerous if performed by unskilled hands. As a matter of principle, it is advisable to render the bladder anesthetic by injections of a two per cent. solution of novocain, or alypin, together with adrenalin, because in this way we are enabled to avoid the irritability and painfulness so characteristic of

a tubercular bladder, and thus, to sufficiently unfold the inflamed and contracted organ.

In very advanced cases it is impossible to sufficiently dilate the diseased bladder. In these, we usually inaugurate a preparatory treatment by keeping the patient in bed with a thin catheter in situ, and by repeatedly and carefully washing the bladder with a very weak solution of sublimate. At the same time, we inject small doses of tuberculin. In this way, we can in nearly every case, sooner or later, perform cystoscopy after injecting the novocain or alypin into the bladder; or in very severe cases, by spinal anesthesia. A distension of the bladder to fifty to sixty c. cm. will be sufficient.

Now, what do we perceive through the cystoscope? In cases not too far advanced, we find that, according to the mode of infection, the primary changes are situated around the ureteral opening of the diseased kidney. The changes differ according to the intensity of the case, from red spots, covered with mucous, or purulent shreds, to very deep and extensive ulcerations. Added to this, very often we find an œdema bulosum around the ureter, which, in many cases, totally obliterates the ureteral opening.

The farther advanced the case, the larger the portion of the trigone involved. The anterior and upper part of the bladder, in most cases, remains intact. Even the sphincter internus is hardly ever affected, which is a proof against the theory of ascending tuberculosis spoken of at the very beginning. Among the many hundreds of cystoscopies in cases of tuberculosis of the urinary organs, only once did we find a very extensive inflammation of the sphincter, and such a severe contraction of the whole trigone that both ureteral openings came so close together as to be observed by a single view with the cystoscope.

The finding of small grey knots of apparent miliary tubercles around the ureter is no proof of tuberculosis. We observed several cases in our clinic, and were deceived. For instance, we treated a clergyman, thirty-five years of age who, for a year, had suffered from unexplained pyuria, and had become very much emaciated. We found in the bladder, around the right ureteral opening, typical greyish miliary tubercles, and thereupon, diagnosed tuberculosis of the right kidney. The operation

showed the existence of stones in the kidney, and a pyelitis; but no tuberculosis was found.

Furthermore, the healthy appearance of an ureteral orifice and its vicinity does not prove the integrity of that kidney. It may be of fatal consequence, if we were to rely upon the mere cystoscopic results. Of this I can give you an instructive example:

A young girl had for many years suffered from pyuria and dysuria; we found in the urine tubercle bacilli. The cystoscope showed ulceration of the left ureter, and of the left side of the bladder wall, while the right ureteral opening and the right side of the bladder appeared to be in a healthy condition. We, therefore, diagnosed tuberculosis of the left kidney, and intended to remove that kidney because we supposed the other to be sound. Fortunately, we had previously performed double ureteral catheterism, and in this way, found that the right kidney was also tuberculous, and its function much worse than that of the other, although the cystoscope did not show any pathological condition of that kidney. We, therefore, desisted from the intended operation, as the case was inoperable.

Similar cases have occurred since. We learn from such experiences how deceptive it would be to rely wholly on the cystoscope. It is, therefore, absolutely necessary in every case of tuberculosis of the urinary organs to perform double ureteral catheterism, in order to know the primary seat of the disease, and how far it is advanced. More than that, in order to be quite sure, we must, especially in cases where the urine from both kidneys is clear, and also in cases where both kidneys show purulent urine, follow the modern functional methods of examination together with double ureteral catheterism.

The nature of these methods of examination can, in the limited time of my lecture, be only briefly touched upon. They consist essentially in properly determining the functional power of each kidney; this again, must be determined by the ability of the kidneys to force molecules from the blood. The better a kidney functionates, the more concentrated the urine and the lower its freezing point. If both kidneys are sound, the freezing point will be alike on both sides. We, therefore, compare the freezing points of the urine of both kidneys obtained through double ureteral catheterism;

we furthermore compare the quantity of sugar (Sa) after injecting phloridzin according to Casper and Richter; we also compare the quantity of blue tincture after an injection of indigo-carmin, according to Voeckler and Joseph. We have always found that the urine from the diseased kidney has a higher freezing point, and excretes less sugar. These methods have been more or less modified by various authors. However, at the present time, no definite conclusions can be formed as to their value. Nevertheless, we must, in difficult cases, make use of them. They will be of especial service in those advanced cases in which catheterism of the ureters cannot be performed. Here is an instructive illustration:

About nine months ago, a young man, 16 years of age, consulted us about a positive tuberculosis of the urinary organs. The kidneys and ureters were not palpable nor susceptible to pressure. The cystoscope showed no clear results because it was impossible to properly clean the bladder wall. After injecting indigo-carmin, the ureter openings became visible, the left being ulcerated. We entered both ureters, but could get no urine because it was impossible to pass the catheter deep enough into the ureters. Because of the cystoscopic result, we diagnosed tuberculosis of the left kidney, but we did not know the condition of the right kidney. We, therefore, performed nephrotomy of the left side and opened two tuberculous abscesses and some caseous spots of the organ of that side. In order to ascertain the condition of the other kidney, we injected indigo-carmin, pinched the ureter off so that from this side no urine could pass into the bladder, introduced a catheter through the urethra into the bladder and cleansed it till the injected water flowed back clear. Eight minutes after injection of the indigo-carmin, blue urine was passing from the catheter. This proved the functioning ability of the right kidney. We now removed the diseased left kidney, and the patient recovered. Casper, who fully explained this case in a paper recently read before the *Verein für innere Medizin*, of Berlin, recommends this method in all such difficult cases, though he completes the functioning test of the kidney by injecting phloridzin.

At any rate, gentlemen, you will admit that our diagnostic abilities have been improved to a high degree; and if we make use of them

in given cases, we will recognize tuberculosis of the urinary organs, especially of the kidneys, in the very beginning, and so be able to prevent tuberculosis of the bladder, for they will enable us to remove the diseased kidney before the affection has reached the latter organ.

The more carefully the physician examines each case and the more conscientiously he notices every symptom, however unimportant, apparently, the more rarely will an incipient tuberculosis escape him. In this connection I should like to call attention again to every unexplained hematuria no matter of how short duration. The following interesting case will illustrate this:

A young man, 28 years of age, consulted us for occasional terminal hematuria. On examining the very sound looking, healthy man we noticed a distinct painfulness in the middle of the left ureter. The urine was clear, containing but few red blood cells. The cystoscope showed no pathological changes. We, therefore, diagnosed stone in the left ureter, and did a nephrotomy for the purpose of removing the supposed stone. To our surprise, we found none; and the kidney appeared to be in a healthy condition. We removed a few small pieces of this kidney and sent them for examination to the pathologist, and he, finding no structural changes, we made a diagnosis of idiopathic hemorrhage from a sound kidney. The kidney was then sutured and replaced. Later, from other causes, it was found necessary to remove the organ, and, to our great surprise, we found in it old tubercles which were not noticed either at the operation or by the pathologist. Here, therefore, the hematuria in the very healthy man was a symptom of tuberculosis we could not have counted on.

In cases where a tuberculosis of the bladder has been fully developed, the prognosis will depend upon the possibility of removing the diseased kidney. Should the other kidney be sound or at least be able to functionate, the diseased kidney must be removed at once even if considerable portions of the bladder are affected. We have again and again become convinced that by nephrectomy even advanced cases of tuberculous bladders will heal without any special treatment.

In the first few days after the operation, a slight increase in the symptoms of the bladder sometimes takes place. In most cases, however, this will soon give way to an improved

condition. In one case, a very remarkable exacerbation of the bladder symptoms was found after the nephrectomy. I consider the case important enough to be worth mentioning. It refers to a gentleman, 60 years of age, suffering from tuberculosis of the left kidney and bladder. For six months before operation micturition had been very frequent and painful. The operation showed the left kidney to be totally tuberculous and the whole ureter swollen to the thickness of a thumb. After removal of the kidney, the ureter was tightly drawn up above the wound and fastened there in order to avoid infection. From the day of operation the urinary troubles constantly increased and the general condition of the patient greatly weakened. There was no improvement, although everything possible was done. It was only after five months succeeding the operation that a slow and gradual improvement took place. The cause of this delay we ascribed to the shortening of the ureter. For this reason we felt obliged to abandon the procedure, the more so since from other causes it has been found objectionable. Fortunately, this case may be considered unique.

In most cases, the urinary troubles will subside within a few days after operation, the urine becoming clear and the intervals between micturitions longer and longer; and because of this, a special, local treatment of the diseased bladder has been found unnecessary in the majority of cases.

Of late, we have been aiding the natural healing tendency of the tuberculous bladder after nephrectomy, by a systematic tuberculin treatment. We are guided by the directions given by Holdheim, and begin with a hypodermic injection of 0.0025 mg. tuberculin; the dose is increased each time and an injection given every two or three days. By this treatment the bladder will heal decidedly quicker than in cases in which no tuberculin is used. We have never seen trouble from its use.

Of the many chemical remedies recommended for local treatment of the tuberculous bladder, sublimate has always proved to be the best and most reliable. We commence with a very weak solution, say 1 to 10,000, gradually increasing to 1 to 3,000. Distension of the bladder should be carefully avoided. We inject from 20 to 50 per cent. of the sublimate solution through a very thin catheter and induce the patient to retain it as long as possible. By

giving morphine and by warm sitz baths, we alleviate the pain caused by the sublimate. Hollaender recommends giving the solution in *statu nascendo*, which is done by the patient taking iodide of potassium internally and injecting calomel into the bladder. We applied this mode of treatment in a number of cases, but found it a great deal more painful without being more effective. Furthermore, we have tried hydrogen dioxide, as also the carbolic treatment recommended by Roosing. This method is as follows: After the bladder has been cleansed of mucus and pus, about fifty ccm. of a freshly prepared 6 per cent. solution of carbolic acid are injected tepid and retained for about three minutes. This procedure is repeated three or four times till the solution is returned clear. There is no after washing. In case of severe pain, morphia is administered. Roosing has effected thirteen cures in eighteen cases by this method. We have tried it several times. In some cases, it was easily borne, but had no healing effect. In one, the patient suffered such excruciating pain, leaving him for weeks in such a pitiable condition, that we did not dare use it again.

In conclusion, I would like to add a few words in regard to the direct operative treatment of the tuberculous bladder; that is, the suprapubic or perineal opening of the bladder and removal of the diseased mucous membrane. Formerly, when tuberculosis of the bladder was considered an ascending disease, this operation was occasionally done, but the results were of no duration. Nowadays, this operation is hardly attempted by a careful physician, according to the theory explained in the first part of this paper; for in the few severe cases of tuberculous bladder so far advanced as to render the removal of the kidney impossible, or in cases in which, after removal of one kidney, the second kidney also becomes diseased and a healing of the bladder cannot take place—in such cases, I say, it is certainly more advisable to relieve the suffering of the patient by narcotics rather than attempt an operation which, in most cases, will only serve to increase his distress.

I hope, gentlemen, you will be convinced that the treatment of tuberculosis of the bladder is a grateful undertaking for a physician who is thoroughly familiar with the character of the disease; and you will agree with me that here, too, the old Latin saying is confirmed: "*Qui bene diagnoseit, bene curat.*"

A PRESENT-DAY VIEW OF THE PATHOGENESIS AND SPECIFIC TREATMENT OF TYPHOID FEVER.

By ALEXANDER G. BROWN, Jr., M. D., Richmond, Va.

Professor of Theory and Practice of Medicine,
University College of Medicine, Physician
to the Virginia Hospital, etc.

The experimental findings of the theoretical research worker and the clinical laboratorist, as recorded in the publications of these two classes of medical observers, should be considered with great care and thought by the active practitioner. Honest and diligent work, involving immense labor and untold patience in search of confirming truth in the various fields of medical science, should be accorded by the practitioner of medicine that same consideration given a fact or an observation made by the clinician on the diseased person at the bedside. From the laboratory—where experiments are often conducted on the animal, in which artificial disease processes are set up, in order that under controlled conditions the nature and the unknown processes of such morbid conditions may be observed—is coming daily a large volume of new data which the practitioner of medicine must not ignore, but must, on the contrary, carefully consider and thoughtfully weigh. Much, no doubt will be read which may seem purely theoretical and useless from his standpoint, but it will be found that even in the vast amount of published work some new advance, some new scientific fact which is essential to the general and real truth is sooner or later to appear.

For many years workers in medicine have been noting typhoid fever from a clinical and laboratorist's standpoint; and, in addition to the clinical signs and symptoms, certain laboratory tests have been evolved for the early diagnosis of this world-wide disease. But recently certain studies have been conducted along new lines which promise much in the matter of adding to our knowledge of its true pathogenesis, and even seem to promise a solution of the yet somewhat clouded conception as to the specific treatment of that disease with bacterial-product. While it is too early to felicitate oneself with the promise of such a reality in the field of typhoid therapeutics, as has been achieved in the kindred bacterial processes, as carried on in diphtheria, yet there has been done enough of good satisfying work in this new department of bacterial immunity to justify a consideration

of it at our hands as clinicians. And when the new treatment arrives as an assured fact, as it must inevitably do, its rational reception will be universal and cordial.

Until very recently this disease was viewed as an intestinal one. The main pathologic lesions were thought to be in the bowel. The bacillus of Eberth, now accepted as being one of several types of like nature uniformly found in cases running a true clinical typhoid course, was thought to invade the intestinal structures and there to set up its pathologic process, and from this focus much of the varied symptom-display was supposed to arise. From the lymphoid follicles of the intestines and the mesenteric glands, it was held that much of the toxin-symptoms were manifested in the fever, the mental turpitude, the abdominal signs and symptoms; and it was thought that in these patent lesions were to be looked for the leading features of the disease problem. It must be stated that this position has been only in part changed; for these sites are yet considered as being paramount, in the large sense, in the present clinical conception of this disease. But the new thought of the typhoid pathology goes further, and directs attention to the changes carried on in the blood by the bacteria.

The period of incubation is no longer taken to be definite. Formerly, one to three weeks was considered the incubation period. But cases are recorded proving an earlier appearance of the symptoms—notably, the case cited by Duflocq and Voisin (1) of a young girl who swallowed a virulent culture of the typhoid bacillus with suicidal intent. The third day thereafter symptoms appeared, the fever developed on the fifth day, and the rose colored spots the day after. It is further held by some that the typhoid bacillus is a more or less constant inhabitant in some cases of the gastro-intestinal tract without producing the symptoms of the disease. The appearance of the organism in the urine and the feces does not mean that the toxic element is in evidence. However, such findings in the urine and feces show the case to be one of serious danger to others as a typhoid carrier.

But it is the behavior of the typhoid bacillus in the blood that has for us the greatest interest at this time. The bacillus enters the blood early in the disease. Some hold that the micro-organism goes into the blood by the mesenteric glands. Some observers have contended that the bacil-

lus invades the blood stream throughout the lymphatic channels of the intestinal wall. MacLagan (2) points out that the attack of the bacillus is dual, being, in a large number of cases, first in the lymphoid tissue of the intestines and mesenteric glands, and, second, in the blood and intestinal organs. Now we know that the processes in the intestines are more or less variable. There are cases of true typhoid in which there is an entire absence of intestinal lesions, and there are other cases in which the intestinal lesions are very slight, with or without high fever; there may be either a profound or a slight septicemia in cases in which the main lesions may be in the liver, gall bladder, pleura, endocardium or meninges (Osler). But the typhoid change in the blood and internal organs are the chief consideration. The invasion of the blood is during the period of incubation. Rapid growth—some observers even saying that a single bacillus in ten days will produce a billion (Osler, p. 54)—takes place.

Now our studies lead us to the conclusion that it is not the toxin produced by the increasing bacteria which is let loose in the blood, but that it is the poison produced by the action of certain intra-cellular enzymes on the living, increasing bacterial bodies. The formation of a certain endotoxin results from the action of the enzyme; and this endotoxin, acting upon the tissues of the body, produces the train of symptoms which we call typhoid fever. We know that there are other bacteria, belonging to the same group, that set up much the same symptomatology. But in this we can not go.

Let us turn now to the consideration of the specific treatment of typhoid fever, for in its study there is necessarily involved a consideration of the behavior of the bacillus typhosus in the blood.

A hurried review of the literature of the subject, covering the more recent period, leads one to believe that the progress made in the study of the specific treatment of typhoid fever has been largely carried on by Vaughan of Ann Arbor, and Richardson, of Boston, while Conradi and Chantemesse and Wolff-Eisner have been making most valuable additions to our modern conception of the whole typhoid question.

In an interesting paper on the subject, Vaughan lays down the broad premise that there are three kinds of immunity. The first kind of immunity is that secured by use of success-

ive doses of toxins, like that of tetanus or diphtheria; the second is that obtained by phagocytic activity in which destruction of the bacteria is accomplished by the phagocytes; the third is that derived by the lytic or disintegrating action of the body structure of the bacilli produced by the "loosing" property of the body cells. No evidence exists that the typhoid bacillus produces a soluble poison like diphtheria. In diphtheria, the bacillus grows on the mucous membrane producing a soluble poison which is absorbed in the system. In typhoid, the bacillus invades the blood; the condition is a bacteriemia. In the one, we have a local implantation and proliferation with absorption of locally produced toxins; in the other, we have a local invasion followed by a systemic bacteriemia. In the one, we are assured of a curative agent in an antitoxin, while in the other we find no hope for security in that direction. To another source must we look for the specific treatment. While the hope of its realization is yet clouded with some uncertainty, yet the promise of some new data valuable to the solution of this problem is fondly entertained by those working in this field.

We now know that the cleavage of any proteid into its toxic elements will produce poisonous symptoms. For instance, the white of eggs, if introduced in the blood, when acted on by the body cells, will produce toxic symptoms and death. It is held that the bacilli-bodies are but proteids of a specific type. They, when divided by the cleavage power of the enzymes produce a group of elements like any other divided proteid, and in addition to this common property there is the special one which individualizes this from other molecular lysis.

Vaughan has shown that many proteids can be spilt into poisonous and non-poisonous groups. This he has done by chemical processes imitating the processes followed in the body. This was accomplished by Vaughan in the following manner: By the use of sodium hydroxide in absolute alcohol, to a 2 per cent. strength, cleavage of the proteid molecules was accomplished through hydrolysis. The complex body was broken up into two simpler parts—one poisonous, the other non-poisonous. The poison part of this typhoid proteid was found to be similar in its effect upon animals to that of any other proteid poison. Vaughan says "the specificity of these diseases (typhoid fever and tuberculo-

sis) does not lie in the poisons produced in them, but in the non-poisonous constituents of their respective bacteria." These announcements are sustained by a series of experiments which at once appeal to one as being conclusive. It is in the non-poisonous part of the bacterial product that specific treatment is to be sought. This is called the residue—that remaining after the extraction of the poisonous elements. The residue makes up about two-thirds of the body weight of the bacterial body. Much of this is useless. So it is carried through an extracting process for days, then dried and powdered. This residue is again made into solution of 0.5 carbolic, and filtered through porcelain. It is thought, based on parallel instances, that the sensitizing of the body cells is brought about by autolytic action, or broken up by phagocytic action. This actuates the body cell to produce the zymogen which ferment; thrown into the increasing culture-field of billions of bacilli, produces lytic action upon their body structure which in turn sets free in large quantities the two end products—the general proteid poison element and the non-poisonous element or the specific agent in individualizing the symptom-display of the disease.

A number of interesting experiments have been carried on with this residue on animals and man; but time forbids a discussion of them here. Suffice it to say that the main facts, as hurriedly indicated, point to the application of this residue in the light of the attenuation of the typhoid fever course, the immunization of exposed persons and to the prevention of relapses. The injection of the sensitizing residue before sufficient systemic cleavage has occurred would seem, as pointed out in confirming experiments, to prevent further propagation which, if carried on, inevitably means wholesale lysis of the proteid with the absorption of lethal doses of the poisonous and non-poisonous residue. The abortive attacks and the circumscribed growth of the bacilli, as in the gall bladder, are explained by the condition of early systemic sensitization and early destruction of the micro-organism in the one instance, and a slow absorption of the proteid products in the other. In the full tide of typhoid bacteriemia the use of the residue is a doubtful procedure. Cautious use of it may prove useful, while, on the other hand, an increase of the already rapidly form-

ing poison-product may result in over-powering the nervous system.

In relapses, as shown by Richardson, the employment of the residue may serve a useful purpose. In certain cases there may be a number of hardy bacilli which, while the systemic cleavage is going on, withdraw or retreat into the tissues and only re-appear and start the return cleavage in the form of relapse. The wise use of the sensitizing residue will enable the body to meet these returning bacilli and gradually in small numbers to annihilate them.

While this whole subject is yet in a formative shape, nevertheless it is well for us to give a view of the progress already made and then to keep abreast of the new work that is being done along the line of the specific treatment of typhoid fever.

In the early diagnosis, according to our present knowledge, lies our greatest hope for the effective use of the residue-product, made in vitro, in the treatment of typhoid fever.

In conclusion, Chantemesse, after showing in Paris Hospital a mortality of 17 per cent., covering a period of six years, and observing 5,621 cases of typhoid, says, in the treatment of 1,000 cases of typhoid with cold baths and anti-typhoid serum, the mortality was reduced to 4.3 per cent. He notes that better results were obtained in those cases where the injection was made early; and in the cases in which the injection was made in the first seven days, mortality was nil.

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ELEMENTS OF DIAGNOSIS BETWEEN SPASMODIC MOVEMENTS OF THE FACE AND NECK.*

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In view of the want of success which so often follows neurectomy and other surgical procedures for the relief of the quasi-involuntary movements to be discussed, I wish to draw attention to some important factors of the diagnosis which are too often disregarded, perhaps from want of knowledge of the work of Brissaud, and his pupils, Meige and Feindel, who, for the first time clearly delimited, and gave us the means of diagnosing the purely psychogenetic movements (the ties) from those functional movements due to a direct irritation of some

portion of the sensory-motor neurones composing a reflex arc.

Consider first torticollis, in which the head may be held in a faulty position, either constantly or intermittently. When the head cannot be voluntarily straightened, it is evident that neither are the antagonists capable of overcoming the contracted antagonists, nor can these latter be relaxed by the will. Turning the head is not performed entirely by the sternomastoid, for the trapezius is called into play as well as the complexus, splenius recti, and other deep muscles of the neck. Hence this consideration alone, indicates the uselessness of an ablation merely of the spinal accessory, and that any cases thus relieved must be so merely

on account of the rest, and with the suggestion of cure produced by the operation and its accessories. When, in addition, the spinal nerve roots are divided, the spasm, of course, ceases, but it is replaced by a paralysis, which is not less inconvenient, and is incurable; so that the patient is worse off than before; for the functional hyperkinesis of psychic origin, as is generally the case, can with certainty be removed by psychic means, as I shall proceed to show.

The positive signs of the diagnosis must at first be ascertained; and to save space, I place them in the following table, enlarging only upon the means of ascertaining characters of true tic, to which most cases of torticollis belong.

SPASM	TIC	CHOREA	CERECELLAR AND CEREBRO-SPINAL TREMOR.
Sudden, resembling electrical stimulation.	Brusque and brief, slower.	Still slower.	Not sudden but regular and increased by movement.
Rhythmic and synchronous or in lightening waves of same movement.	In volleys of similar movement repeatedly.	Irregular, not synchronous.	
	When tonic, distinguished from stereotyped act by absence of catatonic aptitude.	Extreme variability in movement with tendency to unilaterality.	Similar oscillations.
Muscles often enfeebled.	No weakness, often hyperkinetic hypertrophy.	Myasthenia, hypotonia.	Myasthenia, hypotonia or the reverse.
Exaggeration of reflex concerned only.	Reflexes normal.	Reflexes often modified.	Reflexes increased.
Distribution of peripheral nerve.	Locally conditioned by an idea.	Laterality.	Laterality or not.
Often painful, always distressing. No craving.	Painless.	Sometimes painful.	Never painful.
Persists in and may interrupt sleep.	Tic disappears in sleep.	Sleep interfered with.	Disappears in sleep.
Purposeless	Pseudo co-ordinate, intentional act.	Purposeless	Purposeless
Irreproducible voluntarily, unmodified by volition or emotion.	Influenced by emotion or volition, but impulsive and followed by satisfaction, always arrestible (leaving no trace) by a subterfuge, a neutralizing act, inefficacious mechanically or physiologically, but effective psychically; also variously by solitude, distraction, position, etc.	Uncontrollable by will, aggravated by emotion.	Cease at rest.
Various aetiology, but generally peripheral irritation, e. g. Trigeminal neuralgia (which is not a true tic).	Psychasthenic character Similar heredity, but always first generated by a determining stimulus; it is the sequel to the unhindered repetition of a once voluntary purposive act, becoming an impulsive obsession.	Acute rheumatic diathesis, probably bacterial No similar heredity.	Various neoplasm.

Thus, if the motor reaction is consecutive to pathological irritation at any point on a bulbo-spinal reflex arc, it is a spasm.

If the cortex is, or has been, involved in its production, it is not a spasm.

Should it present, in addition to the fact of cortical participation, the aforementioned distinctive pathological features, it is a tic.

Jacksonian convulsions, hemiathetosis, and the tremors preceding or following hemiplegia are all easily differentiated from both spasm and tic by accessory characters well known to every neurologist, which need not here be discussed.

This kakonethes which invariably precedes the exposition of the true tic ranges it among physiological acts, all of which, when postponed beyond their due period, cause intense desire for their performance, which is followed by relief, just as is the tic. It is, however, a physiological act *perverted*; for it is ill-timed, being dependent upon no adequate stimulus, being unnecessary to the body's health or ultimate comfort, and being beyond the power of inhibition by the patient's enfeebled will, which evidences itself, as a rule, by other stigmata of the psychasthenic state. Into these I cannot enter here, save to mention the scrupulosities, timidities, feelings of inadequacy, desire for peculiarity; as well as the want of correspondence of the emotions with the real situation, showing itself by intense joy or sadness over trifles, the morbid fears, and the painful anguish, sometimes indeed apropos of nothing which such patients exhibit. The arousing of this last symptom when the patient tries to suppress the tic is pathognomonic, differentiating it from a true spasm. The following cases illustrate these points:

Occipital neuralgia and pain in the neck led the patient to try various positions to allay the agony, in the course of which he found that rotation to the right brought transient relief. By dint of repetition, the movement became involuntary (Brissaud and Meige).

In this case, the subject used to spend the whole evening inert, arms folded, without reading or working, tilting his head forwards or backwards to rediscover a "cracking" in his neck from which he suffered—a proceeding which gradually developed into a tic (Brissaud and Meige).

In another case, a school girl was dissatisfied with the place allotted to her in the school-

room, and pretended that she felt a draught on her neck coming from a window on her left. The initial movement was an elevation of the shoulder, as if to bring her clothes a little more closely round her neck; then she commenced to depress her head, and indicate her discomfort by facial grimaces; and these eventually passed beyond voluntary control (Raymond and Janet).

The three cases just cited illustrate the causation of tic by definite peripheral stimulus.

A case arising from a habit attitude was that of a woman who used to pass the day sewing or knitting at her window, and amusing herself from time to time by pensively looking out into the street. Now, long afterwards, she noticed how much more pleasant it was to allow her head to turn to the right, and how troublesome it was to keep it straight. At length she found this impossible, except with the aid of her hands (Sgobbo).

Another case of habit movement is that of the tic of the colporteur; *i. e.*, the heaving of the shoulders, due to the habit of carrying heavy weights upon them.

The peripheral source of tic is well illustrated by the case of Lannois, caused by the constant looking at a papilloma on the nose, and cured by the removal of the growth.

The following case is that of a man forty years old, with a left torticollis dating back twenty months. His account of its origin was to the following effect: For some years he had been employed in a commercial office, where from seven in the morning to eight at night he was occupied in writing—head and body being turned to the left. At the beginning of 1900, consequent on a succession of troubles, he noticed that his head was twisting round to the left in an exaggerated fashion while he was writing; and the rotation gradually began to assert itself at other times, when he was reading, or etailing, or buttoning his boots. Even apart from any other act, the rotatory movement soon became incessant, continuing while he was on his feet, but vanishing completely if he lay down, or if the head was supported. At present he has the greatest difficulty in writing, for his head at once deviates violently to the right.

At the Congress of Limoges, in 1901, Briand reported the following case: As the result of a bicycle accident, a young man developed a

torticollis which ordinary treatment was sufficient to cure; and it remained in abeyance until he entered a government school, when its place was taken by a tic of the shoulder, with twitching of the mouth and eye. At the approach of the annual vacation, the tic disappeared, and the torticollis, for some reason or other, became obvious again. The latter had once more been got under control by the time holidays were over; but on the patient's re-entering school, the shoulder tic again manifested itself, and this sequence recurred several times. A permanent cure was eventually effected, but he has continued as psychasthenic as ever.

I quote now a case showing the extent and the failure of surgical operation: The patient, forty-nine years of age, was suffering from muscular "spasms" that kept turning his head first to one side, and then to the other. Fixation of the head between the hands assured a few moments' respite, but the convulsions were quick to re-appear. The left hand was constantly being brought up to the face in the endeavor to procure immobility, while the arms were the seat of abrupt jerking movements, intermediate between tremor and chorea.

The various reflexes were normal; stimulation of the sole of the foot evoked a flexor response on either side, and no symptom of hysteria was forthcoming. The disease had made its appearance in 1879, when, without discoverable motive, the head had commenced to tremble and to work round to the left. Section of the tendon of the sterno-mastoid did not impede the development of the affection, which two years later increased in intensity, when the above-mentioned movements in the arms were superadded. The likelihood seemed to be that they were of the same nature and origin as the torticollis itself.

The following cases, reported by Desterac, to the Congress of Toulouse, April, 1902, illustrate a lack of accurate neurological technique. The walk of one resembled the spastic gait of Friedreich's ataxia; that of the other was inco-ordinate like cerebellar ataxia; in addition both had "spasm" of the hand in writing, spasmodic movements of the trunk, and "spasmodic terticollis." Both had club foot, and scoliosis, and one was afflicted with "spasm" of the face and left arm. In his case, further there was nystagmus, together with loss of re-

flexes and difficulty in articulation, while fibrillary contractions were to be observed in his muscles. The other patient's reflexes were exaggerated; and he showed a double extensor response. Meige later saw the former case, and found that the scoliosis was not permanent, the deformation of the foot could be overcome, and at the same time he failed to convince himself of the presence of nystagmus and the absence of the knee-jerks. Moreover he happened to observe the patient in the street unawares, and remarked how between two phases of bizarre contortions, his vicious attitudes and convulsive gestures almost entirely vanished. In fact, the clinical picture seemed to be quite another that associated with organic disease such as Friedreich's disease or hereditary cerebellar ataxia.

In the face, the criteria of diagnosis of spasmodic movements in no way differ from the foregoing; two examples will suffice:

A middle-aged woman was seen by the writer with Dr. J. S. Lamb, of Washington. About two years ago, the affection began with slight, short twitchings of the left orbicularis. These became intermittently more extensive until the whole face is now affected. Sometimes they cease for weeks at a time, and then return very violently. They are aggravated by cold air, speaking, eating and emotion; but are not in the least arrested by the most powerful efforts of the will, or by distraction, or concentration of attention elsewhere. While not invariable in extent, the hyperkinesis never transgresses the domain of the seventh cranial nerve. It in no way resembles a co-ordinated act, though the opposite orbicularis sometimes participates slightly. This is due to bulbar overflow of the reflex; for though the patient is a nervous woman, she has become more so since her affliction, yet the movements are independent of this nervousness. They are accompanied by an uncomfortable sensation, and tears sometimes flow during the spasm; but there is no pain. She is not sure whether they persist in sleep.

Dr. Lamb informs me that a case which appears to him entirely similar, was cured by section of the orbicularis muscle at its insertion into the inferior border of the orbit.

Dr. Lamb's cases are both examples of true facial spasm, which is, as a rule, curable only by surgery, either by section of a nerve or other

artificial interruption of the reflex arc in some part of its trajectory.

Case II. One day in June, 1900, the patient experienced a feeling of discomfort in the articulation of the lower jaw, the sequel to a slight alveolo-dental periostitis in the neighborhood of a bad tooth; and, interpreting the sensation as a new and grave symptom in the march of his malady, forthwith proceeded to investigate its development by playing with his maxilla. Then ensued a perfect debauch of of masticatory movements, in which agreeable repetition of every conceivable grimace was joined to protrusion and retraction of the jaw in the search of articular cracks. He became so wholly preoccupied with this tic of mastication that ere long he had begun to pinch the mucous membrane in the inside of the right cheek, between the hindmost molars; and this fresh object of absorbing attention, in its turn, led quickly to some excoriation of the mucosa on both sides. No halt was called by the lower jaw to give the abrasions time for repair, with the natural outcome that they suppurated and paved the way for an attack of infective stomatitis with pain, fever and malaise, which necessitated the application of the thermo-cautery to the ulcerated areas for its relief (Meige).

A recent example of the regrettable confulsion derived from indiscriminate use of the word spasm is afforded by the two cases reported by Girsamo Mirto (*Gaz. de Osped. et de Clin.*, Dec., 1907, p. 1575). One was treated by alcohol injections in the seventh nerve; the other by neurectomy of the ophthalmic fifth. Both relapsed early, and Mirto inferred that the blepharo-spasm must, therefore, be psychic, one of these cases being a tic of professional movement, and the other a tic due to faulty habitual attitude.

All hyperkineses of psychogenetic origin do not derive from the psychasthenic constitution; for sometimes they originate in a fixed idea suggested by imitation, direct command or by some procedure as in the following case of Boettius. (These are called hysterical tics.)

The patient was an Irish woman who became ill after having rubbed her neck with a mercurial ointment, procured from a charlatan. The author tells us that at the end of the week the woman was completely cured by the use of sudorifics, tisanes, by the frequent application of fomentations, and by ointments, etc., applied

to the neck; but that a short time later, having been imprudent enough to put again the mercurial ointment upon the nape of the neck, the same contortions returned. These were neglected for some time; consequently they augmented to such an extent that neither the remedies already applied nor any others were successful.

The second case is that of a Parisian woman who suffered from a similar contortion of the head towards the left side after several injuries resulting from a fall on the sacrum, which occurred over three months previous. The author states that for a short time his remedies appeared to cure the contorsion of the head; but that it always returned, and at the end of two months he gave up the patient. He added that since then, in spite of the efforts of different physicians and surgeons, the contorsion remained as it had been since the beginning.

Though the elements in the former case are insufficient for a certain diagnosis, yet its removal by tisanes and poultices and its production by an ointment show that suggestion was the active cause; in which case it must be called hysterical. The criteria by which hysteria is diagnosed are discussed at length by the author in the September number of *International Clinics*.

The derivation of such fixed ideas from medical sources has been shown by Bernheim and Babinski at various times, and also by the writer at the Congress of Lille. A translation of the communication appears in *American Medicine*, August, 1908.

Unfortunately space forbids the discussion of the manner in which these affections may be removed. It is mainly by psychic means; and much experience, skill, patience and insight into the patient's psychic machinery are required. The writer hopes to discuss the technique of treatment on some future occasion.

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When *amenorrhea* is acute due to cold, worry, fright, grief or mental shock, the flow can ordinarily be promptly re-established by the administration of ergoapiol capsules (Smith), this remedy being an efficient emmenagogue, unattended by danger or discomfort, and acting through its tonic influences upon the uterus and appendages.

PRINCIPLES CONCERNED IN THE TREATMENT OF INTRA-ABDOMINAL TUMORS.*

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There is ample reason to emphasize the importance of well-known underlying principles by which to be guided in the study of intra-abdominal tumors. When these principles are conscientiously applied in each individual case, exploratory incisions for non-operative lesions will diminish in number correspondingly with the increase of deliberate and properly planned operative procedures for therapeutic purposes.

There is a tendency on the part of that peculiar type of surgeon, cursed with an ambition to increase the number of operations he performs, to hastily say to a patient "You have a lump in the belly which must be removed." There is another group of surgeons who reluctantly admit that "the essential point to determine is whether a given case should be treated *medically* or *surgically*, and not so much the exact character of the disease process." While this teaching is in the main not unsound, it does not carry with it the privilege of hastily making exploratory incisions in non-emergency cases unless preceded by a preliminary utilization of every resource in the effort to determine the location and nature of a given tumor, together with the complications and coincident conditions present. I have repeatedly heard operative surgeons state to patients after scarcely more than a glance, "There is no way on earth for any one to determine the nature of your trouble till you are operated upon." In some cases such a statement is essentially correct, but let it come after, instead of before, a conscientious effort and, when permissible, a reasonable length of time. An operation performed for a non-surgical condition is sometimes the cause of at least an unappreciative frame of mind on the part of the patient toward the surgeon; and, when followed by some crippling sequel or fatal catastrophe, is the source of even more chagrin than the discovery that the incision had been made over an area remote from the real seat of disease or that the operation has been followed by no relief of symptoms.

And yet, I would not for a moment discountenance the use of the scalpel as an instrument of precision in the diagnosis of obscure intra-abdominal tumors. On the other hand, exploratory incision is certainly essential, and should be resorted to early in many cases. Surely a patient is just as dead if he dies under the care of the physician as if death follows a surgical operation; and as all intra-abdominal tumors which demand surgical treatment can be most readily removed while the lesion is yet in an early stage of development, it is the plain duty of the surgeon to employ in really doubtful cases the exploratory incision.

When a patient with an abdominal tumor is intelligently and conscientiously studied in the light of a proper history of the evolution of the symptoms, together with a thorough examination, many exploratory operations will be substituted by therapeutic ones, and much disappointment and chagrin will be avoided.

Finally, if the recorded history and detailed description of all the symptoms and physical signs noted before operation be compared with the operative findings and subsequent history of the case, the art of diagnosis will improve at a rate comparable in rapidity to the improvement made in technical operative skill.

It cannot be denied that there is a great deal of disparity between the statement made by diagnosticians on the one hand and purely operative surgeons on the other with regard to the possibility of exact diagnosis in the case of abdominal tumors. This disparity, I believe, is due to lack of simultaneously careful study on the part of the two individuals. The purely operative surgeon, as a rule, fails to study his case beforehand, and the purely internist fails to follow the case to the operating table, and, therefore, is unable to corroborate his clinical studies by the anatomical findings. It is futile for any one to claim to be able to exactly diagnose every case of abdominal tumor. In the case of a colossal tumor a diagnosis of its exact nature and origin is not only unnecessary, but is largely a guess. This is certainly true unless the surgeon has had the opportunity to study the case from its beginning or to discover some pathognomonic sign.

Most students approach a diagnosis purely by a process of exclusion. Diagnosis by exclusion is approaching the task exactly backward. The proper way to diagnose any affection, and

*Read at the Meeting of the Academy of Medicine and Surgery of Richmond, Va., Sept. 8th, 1908.

especially such an anatomic lesion as a tumor, is to follow its development, through a pains-taking history, taking especially into account subjective functional disturbances, and then to make a systematic and complete examination and finally to study and re-study the case on these data as a basis for logical deductions. It is essential that one should exercise self-restraint in the process or he will be liable to jump at conclusions. Every case presenting itself for treatment for any symptom referable to intra-abdominal structures demands a pains-taking physiologic study and physical examination. There are, in cases of real lesion (in contra-distinction to hysterical affection, always some alterations of function referable to the structure involved.

There are located within the abdomen a digestive tract, a biliary apparatus, an abdominal salivary gland—pancreas—a urinary apparatus, a blood making organ, and, in women, a genital apparatus. Lesions in any of these structures are just as sure to produce physiologic disturbances as they are anatomic lesions. In addition, the omentum and its functions must be borne in mind and it should be remembered that certain embryonic structures may persist. It is in these that there is little subjective disturbances, and in which diagnosis must be based purely on anatomic findings. When, therefore, a tumor involves the digestive tract, there will surely be digestive symptoms. When it involves the biliary apparatus there will certainly be some alteration of function of the liver or bile tract. When the urinary system is involved there is at some stage of the evolution of the tumor alteration of the function of urination or abnormal structures found in the urine. When the spleen is involved there are practically always functional and anatomic alterations to be found in the blood. Involvement of the genital organs is bound to promote at some stage, and generally throughout their course, disturbances in menstruation as well as symptoms referable to the collateral catarrhal condition in these organs. It would be better to discover these alterations of function by carefully questioning the patient while obtaining the history, and when this is done to proceed with the detailed physical examination.

Given, therefore, a case of abdominal tumor for diagnosis, some systematic plan should be

followed. After a casual examination a pains-taking interrogation should be conducted with a view to eliciting a correct history.

Gastro-intestinal symptoms must in every case be noted, and when gastro-intestinal catarrh, either acute or chronic, exists it is at once suggestive that the lesion is located in some part of this tube or in its accessory structures, the liver, bile tract, or pancreas. When there is progression in the severity of the gastro-enteric signs this suspicion becomes almost a certainty. To be sure, many patients suffer indigestion entirely independently of any tumor, and, therefore, it becomes necessary to weigh the case carefully to detect the relation between the evolution of the tumor and the gastro-enteric signs. For example, an obvious tumor in the epigastrium attended by paroxysms of copious vomiting of stagnant stomach contents or blood, occurring in a person of cancerous age and attended by signs of pyloric stenosis point positively to cancer of the pylorus. Similarly, a mass in the left hypochondrium found in a patient in whom a history of alternating diarrhea and obstinate constipation with excessive mucus and blood in the stools, suggests strongly tumor of the sigmoid flexure. When there is a history of recurrent attacks of intestinal colic resembling those of obstruction, either complete or partial, and with this there are the signs of dilatation or thickening of the colon above the sigmoid, sigmoidoscopic examination will make the diagnosis positive. In a case, however, of persistent progressive gastro-enteric signs without evidence of obstruction at the pylorus or in other portions of this tube, but with a history of jaundice or of bile in the urine, and the tumor is discovered in the region of the liver or bile tract a diagnosis of a lesion in this structure or in the pancreas is almost sure. On the other hand, a patient showing a distinct mass under the left costal arch without gastro-enteric catarrh or with such a trivial degree of these symptoms as to be entirely of secondary importance to the mass itself, calls at once for examination of the urine and blood to differentiate between splenic tumor and a lesion of the kidney.

In women, tumors of the pelvic organs are common and, when small or of moderate size, can be positively diagnosed. There are invariably conspicuous alterations in the menstrual

function, and there are two direct avenues for examination; namely, abdominal and vaginal. Every abdominal tumor in a woman of child-bearing age calls for a study of the history and a physical examination to detect or exclude pregnancy. When there are signs of pregnancy present or recent, when the mass is located on the side of the uterus instead of involving this organ, ectopic gestation will be indicated by the symptom-complex of salpingitis; namely, pain, bleeding and vaginal discharge. A similar mass without the signs of pregnancy points to tubo-ovarian disease, generally inflammatory in nature. Again, such a mass without the signs of active inflammatory disease and without evidence of pregnancy or tumor of the sigmoid suggests ovarian tumor; and if such a tumor is freely movable and not attached to the uterus a clear cut diagnosis of this lesion is justifiable. A nodular tumor centrally located and having lateral movement is nearly always fibroid. Such patients have generally been the victim for a long time of dysmenorrhea, leucorrhea and menorrhagia.

The collateral symptoms of tumor referable to the urinary organs include a history of alteration of the function of urination, with or without ureteral colic and the detection of blood and pus and other abnormal substances in the urine.

Tumors of the omentum are exceedingly rare, and producing as they do symptoms almost entirely referable to the digestive system, are generally diagnosed as arising from this tube.

Every centrally located tumor of the pelvis in either man or woman should be suspected of being a distended bladder until it is proven otherwise by a catheter. In old men the victims of prostatic obstruction this should always be suspected. The history or even the existence of incontinence of urine does not exclude distention as a cause. The introduction of a long soft rubber catheter will at once evacuate such a tumor.

In conducting a physical examination, the primary purpose is to determine what structure is involved, the nature of the swelling and its general physical characteristics. In all cases it is useful to study a tumor according to its development and its clinical course. A proper knowledge of the anatomy of the vari-

ous viscera and fasciæ is of great aid in determining the location of abdominal tumors.

For diagnostic purposes there have been many classifications made of abdominal tumors and any of these may be adopted. For my own purpose, I do not confine myself to any one classification, but, in a general way, the following has proven fairly satisfactory:

1. *According to development.*—Congenital, sudden, rapid, slow.

2. *According to clinical course.*—Progressive, steady, persistent, intermittent, recurrent.

3. *According to location.*—General, local, superficial, deep.

4. *According to structure involved.*—Abdominal wall; umbilicus; peritoneum and preperitoneal tissues; mesentery; omentum; intra-peritoneal organs; retro-peritoneal organs; infra-peritoneal structures, combined locations.

5. *According to physical characteristics.*—Solid, fluid, gaseous, mixed.

6. *According to structure.*—Hypertrophy, distention, inflammatory, neoplastic, (a) benign, (b) malignant.

All intra-abdominal growths may be classified into two great groups; namely, (1) Those unattended by signs of inflammation; (2) Those with either local or constitutional signs of inflammation, or both.

I realize that this paper is limited only to the discussion of intra-abdominal lesions, but there are certain signs which distinguish all tumors within the peritoneal cavity from those of the abdominal wall and from transparietal tumors.

Briefly, then, a *swelling limited to the abdominal wall* presents the following characteristics:

There are no symptoms referable to internal organs except perhaps as a coincidence—then such symptoms show no relation to the evolution of the swelling.

Mobility with respiration or independently of respiration is with the structures of the abdominal wall and independent of mobility of the diaphragm; i. e., out and in and laterally—not up and down.

Contraction of the abdominal muscles while rising in bed with the arms folded, causes no flattening nor disappearance of swelling and may accentuate it.

Palpation notes superficial location and mobility over or with abdominal muscles.

Dullness is always elicited; deep tympany may be muffled.

In all general enlargements of the abdominal wall, the umbilicus is depressed.

Cutaneous and subcutaneous swellings are not limited to the abdomen, though they may be greatest there. They generally involve also the upper thighs, back and lower thorax.

All swellings below the deep layer of superficial fascia are limited below by the attachment of the latter to the fascia lata just beyond Poupart's ligament, and in the mid line by attachment to deep structures.

SUB-APONEUROTIC SWELLINGS.

These are limited by the semi-lunar lines, costal margin, Poupart's ligament, iliac crest and edge of erector spinæ. They are generally unilateral and caused by hemorrhage, inflammation or emphysema. Such a tumor may be resonant or tympanitic to percussion, but is not movable beneath the muscular wall.

Irregular muscular contractions usually occur in the lower mid abdomen. Such a mass is usually non-tender, its surface even, non-movable beneath the muscles, cannot be felt in the pelvis, is generally seen in hysterical males (so-called "phantom tumor"), and always disappears under anæsthesia to recur afterward. It may persist for months and is often associated with irregular erratic symptoms referred to abdominal organs. It need not be mistaken for pregnancy, ovarian cyst or any other abdominal tumor.

(Continued in next issue.)

PRINCIPLES OF SURGERY.*

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LECTURE L.

Shock.—History—Clinical Picture of a Typical Case—Causes—Pathology—Symptoms—Terminations—Diagnosis—Prognosis—Treatment—Question of Operating During Shock.

It has long been known that patients who met with accidents, or underwent operations not of themselves necessarily fatal, frequently

died without apparent cause. It is only within the last century that it has been known that these cases died of shock. As soon as the condition was recognized, it was studied both clinically and experimentally by the leading men of the profession, and the literature of the subject is now a large one.

The writers of the past generation had a clear conception of the causes and symptoms of shock, but they did not understand its nature, and hence the methods of prevention and cure were inefficient and unscientific. Within the past decade, Crile, of Cleveland, a leader in the new school of surgical physiology, has satisfactorily worked out its pathology, and the publication of his recent articles has revolutionized the practice of the profession in dealing with the condition. There are yet some apparently contradictory facts to be explained, and certain problems to be more fully elucidated, and, consequently, it will probably be best to introduce the subject by giving a clinical picture of a typical case.

Typical Case.—A patient who has been subjected to a mutilating, and perhaps, bloody, operation, is carried to the ward. When placed in bed, he makes no effort to move or speak, but lies staring at the attendants. His face is white and pallid, his features pinched, and his eyes are sunken in their sockets, and encircled by black discoloration. He complains of no pain, expresses no anxiety, and his mental attitude is one of complete indifference. His skin is cold, and bathed in a clammy sweat. His lips and nails are blue, his pulse is rapid and thread like, or may be imperceptible at the wrist. His respiration is shallow, sighing and irregular. A thermometer placed in the rectum shows his temperature to be sub-normal. There is no muscular paralysis, but the patient lies perfectly still, and is disinclined to move. There is no unconsciousness, but he does not speak unless spoken to, and then answers questions in slow monosyllables. If reaction does not follow, the pulse gets weaker and finally disappears; the respiration becomes more shallow, and the skin clammy and colder, and "this momentary pause in the act of death is soon followed by the grim reality." A post-mortem examination shows no pathologic change to explain the symptom.

Causes of Shock.—1. *Loss of Blood.* This is by far the most frequent cause of shock. In

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fact, a sudden hemorrhage produces symptoms so identical with shock that it is difficult to distinguish the two, and a diagnosis can often only be made by the history, or the blood findings. The more rapid the loss of blood, the more severe the shock, and the less the chance of recovery.

2. *Loss of Heat*.—The abstraction of body heat by operating in a cold room, exposing the abdominal or other viscera to the air, or wetting the clothing of the patient with solutions which, while warm at the time, soon become cold, all strongly tend to produce shock.

3. *Loss of Time*.—An operation which, if quickly done, would produce no appreciable degree of shock, if unduly prolonged, frequently is followed by alarming symptoms. This is partially due to the fatigue, exposure and prolonged anesthesia to which the patient is subjected, but is also due to the continued irritation of the brain and spinal cord by stimuli from the field of operation. Ether and chloroform prevent the appreciation of pain, but they do not protect the nerve centers whose exhaustion causes shock.

4. *Mechanical Injuries*.—These vary in degree from rough handling of tissues by the surgeon to a compound dislocation, or crushing injury of a limb by an accident. The various tissues and organs of the body have a shock producing power in proportion to their nerve supply, and, consequently, the degree of shock will depend not only on the severity of the trauma, but also on the sensory innervation of the part. Injuries to certain regions of the body are especially likely to be followed by shock, such as a blow on the testicle, in the pit of the stomach, or at the angle of the jaw.

5. *Burns*.—The action of intense heat on the nerve terminals of the skin often produces profound shock. Mummerly has pointed out that burns of the first and second degree produce more shock than burns of the third degree. This is due to the fact that, in the first case, the nerve terminals are exposed and irritated; whereas, in the second, they are destroyed. A burn involving more than one-half of the body usually causes death from shock.

6. *Perforating Injuries*.—Rupture of the gall bladder, perforation of a gastric, duodenal or typhoid ulcer, or a rapidly fulminating case of appendicitis, resulting in the discharge of irritating fluids into the peritoneal cavity, fre-

quently causes sudden and profound shock. It is supposed that the pus, gastric juices or intestinal contents act on the peritoneum as heat would act on the skin.

7. *Mental Emotions*.—The psychic condition of the patient undoubtedly influences the occurrence of shock. There is no reason to doubt that violent emotions, such as intense fear or terror, can exhaust the nervous power and produce the same results as a physical injury. A case is on record where a man who had been sentenced to death by bleeding actually died on hearing water trickle into a basin, which he supposed to be blood issuing from his veins. Another case is quoted where a man fainted and died under the impression that an operation was in progress, when the surgeon was, in fact, only tracing with his nail the line of incision on his perineum. Brunton quotes the case of a janitor of a college who had rendered himself obnoxious to the students. One night they carried him to a lonely place, and having dressed themselves in black, tried him for his life. He at first affected to treat the incident as a joke, but was assured by the students that they meant it in real earnest. He was found guilty, and was told to prepare himself for death. He was blind-folded and made to kneel before a block, and was struck on the back of the neck with the edge of a wet towel. He fell to the ground, and, to the astonishment and horror of the students, they found that he was dead from shock.

In addition to the foregoing exciting causes of shock, there is considerable influence exerted on its production by the age, sex, temperament, mental condition, and general health of the individual. The young and the old are more likely to suffer from shock than those of middle years. Women, as a rule, stand injuries and operations better than men. Those of sanguine or nervous temperament suffer more from shock than the lymphatic. The chronic invalid usually stands surgery better than a robust man, and a patient who comes to the operating table confident and hopeful is less likely to develop shock than one possessed with gloomy forebodings as to the future.

Pathology of Shock.—Shock is stated by Crile to be essentially due to an abnormally low blood pressure. The normal blood pressure is dependent on three factors: First, a proper force of heart beat; second, a proper rate of

heart beat; and third, a proper peripheral resistance. The effect of variation of these factors may be stated in several definite laws:

1. The blood pressure must vary with the *rate* of the heart, if the heart strength and peripheral resistance remain constant.

2. The blood pressure must vary with the *strength* of the heart, if the heart rate and peripheral resistance remain constant.

3. The blood pressure must vary with *peripheral resistance*, if the heart strength and heart rate remain constant.

4. The blood pressure may be normal if one or two factors increase, while one or two factors decrease.

5. If all three factors increase, we must have a proportionate increase in blood pressure.

6. If all decrease, we must have a proportionate decrease in blood pressure.

7. All three factors are controlled by the nervous system.

Shock is due to irritating or painful impulses which are produced by accidents or operations. These impulses act on the centers of the brain and cord, first causing stimulation, but later resulting in exhaustion or paralysis. They may be of such degree as to at once overwhelm the centers, or they may produce the same result slowly, by acting continuously for a considerable period of time. Crile believes that shock is invariably due to paralysis of the vaso-motor centers and consequent loss of peripheral resistance. Howell believes that it may also be due to feeble heart action. Accepting the latter conclusion, as seems borne out by clinical facts, shock may be defined as a condition characterized by long continued low blood pressure, due either to partial or complete paralysis of the vaso-constrictor centers, and consequent lack of peripheral resistance (vascular shock), or to alterations in the rate and force of the heart beat, due to partial or complete loss of activity of the cardio-inhibitory center (cardiac shock).

Whether the low blood pressure be due to vascular or cardiac causes, the result is the same. The face becomes blanched, the skin pallid, the temperature sub-normal, the pulse weak and thread-like, the respiration shallow and sighing, the muscular power impaired and cerebration blunted. These changes are due to lack of sufficient circulation to maintain normal physiological function. The blood does

not flow freely through the arterial system, but accumulates in the dilated venous trunks, especially in the abdominal region. In other words, the arterial system bleeds into the dilated venous system, and, as the old writers put it, the patient may bleed to death in his own vessels.

Symptoms of Shock.—1. *Facial.* The expression of the face is frequently so altered that it is difficult to recognize the individual. The pupils are but slightly changed, but the eyes are sunken in their sockets, the lids half closed, and the areolar around them darkened. The nose is small and shrivelled, and the lips are thin, pale and usually parted.

2. *Cutaneous.* The skin has a sickly pallor, and the surface of the body is cold and bathed in clammy sweat. The fingers and nails are of a bluish color, and the skin on the palmar aspect of the hands lies in loose folds.

3. *Mental.* The patient is not unconscious, but the mental faculties are less acute than normal. He complains of no pain, expresses no anxiety as to his future, and shows no interest in what is being done for him. If asked a question, he will reply intelligently, but slowly and with effort.

4. *Muscular.* There is no paralysis, but reflexes are diminished, and the voluntary and involuntary muscular systems are greatly relaxed. The patient lies in the posture in which he is put, and does not voluntarily change his position or move his limbs. There is frequently loss of control of the sphincters, with involuntary discharge of urine and feces.

5. *Respiratory.* Respirations are, as a rule, quickened, irregular and shallow. In grave cases there is gasping, although air hunger is never as marked as in pure hemorrhage.

6. *Circulatory.* The condition of the pulse varies with the degree of shock. It is usually small, thread-like, and, at times, imperceptible. The strength of the pulse is an important guide to the surgeon in making a prognosis.

7. *Temperature.* The temperature is sub-normal, a thermometer placed in the rectum frequently registering as low as ninety-five or ninety-six degrees, Fahrenheit. Much lower temperatures are reported from observations taken in the axilla, but these are not reliable.

Terminations.—Shock may terminate in either of two ways:

1. *Reaction.* If recovery ensues, the patient begins to move about in bed, turns on his side,

and perhaps vomits. The pulse gets fuller and slower; the respiration deeper and more regular; the skin warmer and dryer, until finally there is a return of the system to its normal condition.

2. Death. In fatal cases of shock, the pulse grows weaker and finally disappears. Respiration becomes shallow and irregular. The skin grows colder; the patient gradually becomes unconscious; the sphincters relax, and he slowly expires.

Diagnosis of Shock.—The diagnosis of shock, at the present time, cannot be made with scientific accuracy, and must be based on the personal experience of the surgeon. It is made on the symptoms above described, especially the weak, rapid pulse, the cold, pallid skin, the subnormal temperature, and the curious condition of the mental faculties.

The differential diagnosis between shock and hemorrhage, syncope, fat embolism, hysteria and other conditions with which it may be confused, is sometimes difficult. In hemorrhage, the symptoms are usually gradual in onset, and progressive. The patient often faints, recovers, and faints again; and is usually restless, tossing from side to side in bed, and expressing great anxiety about his condition. In syncope, there is usually preliminary nausea, ringing in the ears and dizziness, and when the actual attack ensues, the patient becomes completely unconscious. In fat embolism, the symptoms usually develop twenty-four hours after injury, when there is sudden pallor, irregular heart action, difficult breathing, and perhaps convulsions. This occurs chiefly after fractures or operations on bone. Fat will be found in the urine. In hysteria, there are usually the characteristic stigmata of the disease; the temperature remains normal, and careful observation will usually detect a flaw in the symptoms complex.

Prognosis of Shock.—This depends on the degree of the injury, the severity of the symptoms, the general condition of the patient, and the presence or absence of complications like septic infection. Shock may prove instantly fatal, as in death from a blow over the solar plexus, or the patient may live one or two days and finally die, or recovery may take place when hope has been practically abandoned. Shock, the result of profuse hemor-

rhage, is more dangerous than shock from other causes.

Treatment of Shock.—While much difference exists among surgeons as to the treatment of shock when it develops, there is great unanimity of opinion as to the necessity of using certain measures to prevent its occurrence. Shock is rarely seen in a hospital where well conducted operations are skillfully performed on properly prepared patients. The call for curative treatment of shock is now principally seen in cases injured in railway accidents or other catastrophes.

Preventive Treatment.—1. Avoid fright, by gaining the patient's confidence, inspiring him with hope, and sending him to the table in good mental condition. If the operation be one of election, the surgeon should be absolutely frank in discussing the dangers of the procedure at the time the patient is considering whether or not to have it done. If, however, it is decided to do the operation, the surgeon should no longer refer to the possibility of disaster or death, but should become optimistic and dwell on the relief and benefits to be expected. If, at the time of the operation, the patient is nervous, it is often wise to give a hypodermic of morphine. In the case of a child, when possible, it is well to fix the hour of the operation so that the anesthetic may be given while asleep.

Sometimes an adult is met with who is so panic-stricken at the thought of an operation that it may be necessary to adopt the following method, suggested by Crile, which, of course, should only be carried out with the full consent of near relatives or friends. The surgeon tells the patient on his admission to the hospital that he does not know whether or not it will be necessary to operate on him, and that he will only undertake the case with the distinct agreement that he is to do whatever he thinks best. The consent of the patient having been obtained, he is subjected to considerable preliminary examination, and told that it is probable he can be cured by the inhalation treatment. An anesthetizer goes to his bed at a certain hour each day, places a mask over his face, and lets him inhale alcohol, disguised with some aromatic agent. At the same hour on the day set for the operation, the alcohol is given as usual, with the slow addition of an anesthetic, until unconsciousness is pro-

duced, and the patient can be transported to the operating room. This expedient has, in Crile's opinion, enabled him to save several hundred lives which would otherwise have been lost.

2. Avoid the loss of blood during the operation, by the use of Esmarch's bandages and constrictors in amputations, by angulation of the table in work on the head and neck, and by carefully and quickly catching and tying all bleeding vessels. Bloodgood says that a long, bloodless operation is less likely to produce shock than a short, bloody one.

3. Avoid the loss of heat by operating in a warm room, keeping exposed viscera and raw surfaces protected with hot moist towels, and seeing that the patient does not become wet with solutions. It is also wise not to have the patient in actual contact with the surface of a glass or iron table, but to interpose some non-conductor, if not actually to put him on a hot water pad.

4. Avoid the loss of time, not by breathless haste, which might lead to imperfect work, but by having a distinct plan of the operation in mind and executing its various steps speedily. Occasionally, in extremely difficult and tedious operations, requiring more than an hour for their execution, it is well, if circumstances permit, to do part of the work one day and complete it one or two days later. Victor Horsley advocates this being regularly done in cerebral surgery—trephining and exposing the dura one day, and subsequently dividing it and doing the work in the brain structure.

5. Avoid bruising and tearing tissue, roughly handling or pulling on viscera. Dissection should not be made bluntly, and all manipulations should be gently carried out. The fact that the patient is under an anesthetic and his sensory centers unable to appreciate pain does not mean that his vaso-motor and cardiac centers are equally protected and he cannot develop shock.

6. Avoid division of large nerves, especially in weak patients, until these have been blocked by the intra-neural injection of cocaine. Crile says: "As no impulses of the kind can pass either upward or downward, there is no more shock in dividing tissue—even the nerve trunks themselves, thus blocked—than in dividing the sleeve of the patient's coat." In operations on the lower extremity and pelvis, this

principle can be more extensively applied by injecting the cocaine into the spinal canal at or near the fourth lumbar vertebra.

Curative Treatment.—When shock is actually in existence, treatment is of little avail, and in using remedies the surgeon should be careful that, if he do no good, at least he do no harm. Senn says that it is as important to know what not to do as to know what to do, and Warren emphasizes the fact that it should be clearly remembered that the condition is one of exhaustion, and that rest is needed for repair. As the symptoms of shock are those of profound weakness and prostration, it was long a practice to give stimulants, such as alcohol, digitalis or strychnine. According to the modern pathology, which is undoubtedly correct, these remedies do harm. The centers are already partly or completely paralyzed from overstimulation, and the administration of strychnia, according to Mummery, is like beating a tired horse. It may call forth an effort if we beat hard enough, but it hastens the end. Or, to quote Crile, "It would be just as logical to treat strychnine poisoning with traumatic shock as to treat traumatic shock with strychnine."

The only logical remedy is one which will act, not on the centers, but on the dilated vessels, restoring the peripheral resistance. Unfortunately, we have no satisfactory means to accomplish this end. The following is a brief description of the present accepted mode of treatment.

1. Secure physiological rest by placing the patient in a quiet room, excluding all friends and relatives, and giving a moderate dose of morphia. The surgeon and attendants should be calm and confident in their manner, and the patient should not be allowed to infer that his condition is unusual or alarming.

2. Apply external heat by placing the patient between warm blankets, putting hot water bags to the feet, thighs and body, and, in some cases, injecting hot fluids into the rectum.

3. Mechanically support the circulation by posture, by bandaging, or by the pneumatic suit. In mild cases of shock, all that may be necessary is to lower the head of the bed, thus gravitating the blood to the anemic brain. In graver cases, the limbs should be enveloped in elastic, non-absorbant cotton, and firmly band-

aged from extremity to body. A compress may also be applied over the abdomen. Crile's pneumatic suit is an appliance by which the entire surface of the body is subjected to pressure by compressed air. Unfortunately, however, it is rarely at hand when needed.

4. Transfusion, with warm saline solution by rectum, beneath the skin, or into a vein. In cases of shock due to hemorrhage, this is the most logical and efficient method of treatment. In cases of shock from other causes, however, it is not so valuable. The average individual can only take up about two quarts of the solution. After this amount has been given, an interval must elapse, and then only two or three ounces given at a time. If this precaution is disregarded, fatal complications may ensue from edema of the pulmonary or abdominal regions.

5. The administration of adrenalin chloride, which is usually effected by combining it with the saline solution used in transfusion, one drachm of the 1-1000 commercial solution being added to one quart of normal salt solution and introduced slowly, but continuously, the rate regulated by the character of the symptoms or the record of a sphygmomanometer.

QUESTION OF OPERATING DURING SHOCK.

In accident cases the surgeon is confronted with the question whether to operate at once or wait for reaction; whether he had better add the shock of an operation to the shock of the injury, with danger of death of the patient, or whether he had better wait, hoping for improvement, but possibly sacrificing the patient's only chance for life. There is no rule, although most authorities advise waiting, unless the mutilation causes great pain, or unless hemorrhage is actually in existence. On the other hand Wainwright says: "To remove the nerve impulses after trauma, an immediate repair of injury is very important. Leaving a mangled, oozing limb, with crushed and exposed nerves, with the hope that it will give more favorable opportunity for intervention, will, in most cases, by allowing the cause continually to act, only drive the patient in a condition beyond all hope."

Correspondence.

Repeal of License Taxes on Virginia Doctors.

Mr. Editor.—Very few physicians are posted correctly concerning the personnel of the next

legislature of Virginia. The Senate will be the same as the last session, for all were elected for four years. For the sake of emphasis let it be repeated, that this holds true for every member of that body, and not half as heretofore.

The entire House of Delegates will be elected next year. It will be composed of from fifty to seventy per cent. of old members, if the custom in Virginia is not changed; for nearly always over half of the previous House is back again in their seats at successive sessions.

Since twenty-six Senators were in favor of the Repeal Bill during the last session, and fourteen were against it, the doctors can count the Senate safe next time, provided they show their Senators their appreciation and sufficient interest in the measure during the next session to encourage them to be present and vote for it.

On the above basis, at least thirty friends of the Repeal Bill will be re-elected to the House of Delegates, and in addition at least twenty-one new members must be added to the record to make a Constitutional vote of 51. If doctors throughout the State will only get active and post all the new members *before they leave home*, seventy-five members of the House can be counted upon to vote for it on roll call fifteen months from this date.

In the present short legislative sessions of sixty days no bills of any importance can be passed through the Virginia Legislature without active work in and around the Capitol. However, physicians may deplore this, it is nevertheless true, whether the Bill desired is for physicians or for any other profession or calling or business interest whatever. Therefore, to get what is right and just, doctors must be practical men in every field and contend with all their might for relief from this unjust, and no longer needed, State license tax.

In the new order of affairs, under the new Constitution and By-Laws of the Medical Society of Virginia, let no mistake be made by not beginning right, and let every physician present determine to back up the new Legislative Committee with all the influence that is possible to collect, provide sufficient means so the real work can begin early next year, and persist with all the force that professional dignity and propriety will allow. Only in this way is success to be assured.

Yours respectfully,

J. BEVERLY DESHAZO, M. D.

Ridgeway, Va., Oct. 4, 1908.

Book Notices.

Diagnosis by the Urine. By ALLARD MEMMINGER, M. D., Professor of Chemistry and Hygiene and Clinical Professor of Urinary Diagnosis, Medical College of the State of South Carolina, etc. Third edition; enlarged and revised, with 27 illustrations. Philadelphia. P. Blakiston's Son & Co. 1908. 12mo. 116 pages. Cloth, \$1.00 net.

We are glad to see this new edition of "Practical Examination of Urine with Special Reference to Diagnosis." It is a handy, practical guide book for the general practitioner. After noting the physical characteristics of urine in health, chapters follow on deviations in disease, deviations in the normal chemical composition in disease, morbid products and coloring matters in the urine in disease, morbid products which are properly classified as urinary sediments and urinary calculi. Then comes a most valuable chapter on "differential diagnosis of chronic Bright's disease, based on a classification of the normal absolute, the absolute, and the relative absolute of solids, and urea found in urine with albumin, and with or without tube casts." A resume is given of diagnosis of disease of the kidney and urinary organs, and then a table for calculating the absolute solids in urine of specific gravities ranging from 1,004 to 1,030. The rules given for life insurance examinations are very important. Details are given as to how to make practical examinations of urine. The book is a useful *multum in parvo* about urinary examinations.

The Medical and Surgical Knowledge of William Shakspeare, with Explanatory Notes. By JOHN W. WAINWRIGHT, M. D. New York. Published by the Author. 1907. 8vo. 80 pages. Cloth.

We most highly appreciate the compliment of receiving this book, which is one of the author's edition, limited to 200 registered and numbered copies. The frontispiece consists of a photograph from a photograph of the original engraving made in 1623, copied from a painting on a panel, made by joining two pieces of elm wood, done in 1609. The natural decay of the wood upon which it was painted is clearly shown. This book is compiled from an edition of Shakspeare's works printed 1796. In the Introduction, facts are brought out to prove that the great master spelt his name Shakspeare.

This collection from his works includes many of his references to medicine, surgery, mental and nervous diseases, obstetrics and midwifery, therapeutics, pharmacy and toxicology, anatomy, physiology, hygiene and dietetics, ethics, and medical jurisprudence. A double column, two pages, index of diseases and subjects to which Shakspeare refers in his different writings, concludes the book. It is wonderful to note his great versatility and well founded information about such matters, for there is no evidence in his biography that he was ever a medical student. Annotations are made by Dr. Wainwright wherever necessary to make the full understanding of Shakspeare's medical writings more clear.

Editorial.

Medical Society of Virginia.

Before our next issue, the Thirty-Ninth Annual Session of the Medical Society of Virginia will be on hand. The Program issued contains sixty-two titles of papers, and would have had more had some authors not voluntarily withdrawn them—seeing that there is but little prospect of getting through with the reading and proper discussion of so many during the three days scientific part.

A glance at the authors gives the Society the appearance almost of an Interstate Association. Surgeon-General Dr. P. M. Rixey, of the U. S. Navy, of Washington, D. C., Dr. Lewis C. Morriss, of Birmingham, Ala., and Dr. Frederick Peterson of New York City, are invited guests. All the others on the list are members or honorary members of the Society. In addition, there will be present a number of Fraternal Delegates from other State Medical Societies, who have all the privileges of members in entering upon discussions, etc.

The fullness of the Program will, unfortunately, compel the division of the Society into at least two sections. If so, a reporter will have to be provided for each to take notes of discussions, etc.

The membership of the Society, with applications in hand for election this year, sweeps the State practically this year of most worthy doctors in it. There are in Virginia perhaps fifty or sixty reputable colored doctors, but

are not eligible on account of race distinctions. There are enough of these to form a State Medical Association of their own. There are about fifty worthy white doctors left who, from crankiness or other causes, will not join any Society of doctors. There are some thirty or forty who tie themselves to an exclusive school of practice, like homeopathy, eclecticism, etc., who, because of their exclusive dogmas, are not eligible. There are in addition, something like 200 in the State who are irregulars, quacks, charlatans, etc., who are not wanted. So that, when the medical population of Virginia is compared with that of other States of the Union it stands in the very forefront of them all as to the worthy and desirable membership of its State Medical Society. It is the intention and effort of this Society to enroll in its membership only such as are properly representative members of the regular profession.

The financial depression of the times will perhaps cause an unusual number of members this year to appear as "delinquents"—although the annual dues are but \$2.00 a member. It should not be forgotten that hereafter three years is the limit of time of indebtedness to the Society. If members could only be persuaded to remit \$2.00 at the beginning of each fiscal year to the Treasurer, it would save an immense deal of embarrassment and expense of "dunning."

Our editorial, two issues ago, on "Do Medical Society Transactions Volumes Pay?" seems to have awakened a great deal of favorable interest—not only in Virginia, but elsewhere. The plan there proposed can be made more effective and satisfactory if each author were to prepare a ten or twelve line *synopsis* of his paper for incorporation in the proceedings of the Society, which, in addition to the title, would let those few who read the *Transactions* volume get a just idea as to the contents of the paper, and thus suggest to him whether or not he wants to read the paper in full. If so, the correct references in the Secretary's notes of the paper, in the *Transactions*, can point to the exact Journal in which the contribution is published in full, with the accompanying discussions. A distinctively State Medical Society Journal is not the thing wanted for reasons given in a former editorial. Such a State Medical Society Journal has practically all the objections of the present form of *Transactions* volume publications; for it cannot secure a

reading patronage scarcely outside the limits of the State. It was a good stroke of policy adopted by the *Journal of the American Medical Association*, for that Journal necessarily draws contributors from the entire membership of the Association, in every State of the Union, in the form of papers read before its many sessions; although many papers so read cannot appear in that *Journal* until many months after the session—even a year. Such a Journal, however, only adds to the uselessness of distinctive State Medical Society Journals in forcing them to be too local in their circulation. Independent medical journals are not so embarrassed.

Now that the session of 1908 is so near at hand, it cannot be amiss again to refer to the untiring work and energy of Dr. William F. Drewry, as President of the Society, in reference to its every interest—even the minutest details. Such an officer is compelled to make a success of the Society.

Repeal of State License Taxes on Doctors.

It is a mistake to suppose that the Virginia profession is dead to this issue. Phoenix like, it will rise again at its proper time, and in stronger array than ever. Had the Legislative Committee of the Society during last session of the General Assembly of Virginia succeeded, they would have been lauded to the skies. They are yet deserving of the thanks of the profession because of their untiring effort, and to some of them it was a work of self-sacrifice for what was conceived to be of general interest to doctors. Their motives cannot be questioned, nor their industry exceeded—whatever some may have to say in criticism of the manner of battle. That Committee having made the entering wedge will most probably retire, rather than subject themselves to criticisms because of failure; and during the approaching session of the Medical Society an altogether new Committee may be appointed to take charge of the Bill, which it is hoped will be pushed to its successful issue.

Such a Committee ought to be appointed during the approaching session of the Society, so as to be able to be at work next summer and early fall before the Legislature meets again—while candidates are in the field and are then impressionable. As most probably there will be occasion to speak frequently of this subject

during the next fifteen months, we do no more just now than to suggest that proper resolutions be framed for consideration by the Executive Council of the Society during the early session, so as to allow ample time for the selection of a Committee which shall succeed in securing legislation for the repeal of the State license taxes on Virginia doctors.

In this connection we would call special attention of our Virginia subscribers to the letter of Dr. J. B. DeShazo, Chairman of the Legislative Committee for the Society during the last session of the General Assembly of Virginia, which will be found in the Correspondence Department of this issue.

The International Congress on Tuberculosis,

Which met at Washington, D. C., September 21st, and will adjourn October 12th, is a body of earnest, able workers, gathered from all parts of the world—intent on the object before them, the study of the means of prevention, the early recognition of the invasion of the disease, and the adoption of measures to cure. The Congress is working in seven sections, with the purpose of giving consideration to all phases of the tubercular question. In the daze of excellent papers and discussions, many hopeful suggestions have been made; but it is impossible as yet to properly systematize and digest the many facts asserted or proven. It will probably require months of careful study and investigation or testing to establish the verity or the errors of the most hopeful of contributors to the Congress. The proceedings of the Congress will be carefully edited, and are to be published early during 1909. It is expected that the Section proceedings will make at least four volumes of about 2,000 pages. If the element of self-aggrandizement is eliminated by some of the authors, and properly recorded practical scientific advances are brought out, the Congress will have accomplished great and lasting good to humanity.

United States Pharmacopoeial Convention.

The preliminary announcement of this Convention has been issued for 1910. Each State Medical Association or Society is entitled to send three delegates, who will have votes on all subjects connected with the policy of the revision. Among the questions which the physician

members of the Convention especially will be called upon to answer are the following:

"What undoubtedly useful drugs do you prescribe which are not contained in the United States Pharmacopeia? Why should they not be contained in the next revision? This would involve the question whether certain patented products should or should not be included.

"What drugs are believed to have so little merit, or to have been so far replaced by more modern ones, that they should be omitted from the Pharmacopeia?

"Are there not mixtures of drugs, which, if desirable at all, belong more properly to the National Formulary?

"Are the 'average doses' satisfactory—safe, on the one hand; efficient on the other?"

The help of ophthalmologists, dermatologists, and other specialists is wanted so that the Pharmacopeia may be truly representative of the entire medical profession.

Address correspondence to the Chairman of the Committee on the Pharmacopeia, Dr. Reid Hunt, 25th and E. Streets, N. W., Washington, D. C.

The Bedford County Medical Society,

At its regular meeting, September 14th, elected the following officers: Drs. J. S. Mitchell, President; Dr. W. O. McCabe, Vice-President, and Dr. J. A. Rucker, Secretary and Treasurer. The next meeting is to be December 14th, when Dr. W. A. Strother will read a paper on "Bier's Hyperæmic Treatment," which is to be followed by a banquet. We extend to this Society our congratulations on the increase in their membership, and trust the good work will continue.

The Patrick Henry Medical Society

Will meet at Stuart, Va., October 15, 1908. Dr. R. R. Lee is President, and Dr. J. R. Perkins, of Spencer, Secretary.

The Lectures on Principles of Surgery

By Dr. Stuart McGuire, Richmond, Va., embracing a series of fifty lectures by the author before his class at the University College of Medicine, come to an end with the publication of the Lecture on Shock, in this issue. We have received many expressions of favorable comment as the Lectures have progressed, and Dr. McGuire has, by his easy style, added prestige to his name, not only as a surgeon, but as an author of the first rank.

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CORRELATION OF THE PHYSICIAN AND THE LAYMAN.

ADDRESS OF THE PRESIDENT.*

By WILLIAM FRANCIS DREWRY, M. D., Petersburg, Va.

Superintendent Central (Virginia) State Hospital, etc.

"No man," says Carlyle, "is born without ambitious worldly desires." To be the official head of this Association is surely a most laudable aspiration. Conscious, however, of my unworthiness and of my inability to measure up to the standard of my predecessors, it was with painful misgivings that I assumed the duties and responsibilities of this high office. But, one thought reconciles me, and that is this: The same generosity that prompted my colleagues to thrust this greatness upon me, will, perhaps induce them to "pass my imperfections by." Psychology teaches us that it is most difficult to give expression to our deepest emotions. Therefore, gentlemen, I acknowledge, in stereotype phrase, but with profound gratitude, your expression of confidence and partiality.

A British historian once said: "Before you attempt to write on any subject, be quite certain that you can say something fresh about it."

As there is nothing original in me but original sin, I dare not hope to tell you anything new. The field has been so well harvested by others that there seems nothing left even for a gleaner.

Having made my confession, I shall make some discursive remarks on *The Correlation of the Physician and the Layman*.

RECENT ADVANCES IN MEDICINE AND
SURGERY.

It is nevertheless pertinent on this occasion

*Delivered before the Medical Society of Virginia during the Thirty-ninth Annual Session, held at Richmond, Va., October 20-23, 1908.

to insert in this address some of the more important recent advances in medicine and surgery.

The past thirty years has been the most active period in the acquisition of medical knowledge and medical art. It marks the transformation from the old to the new. It is characterized by the most fruitful endeavor and the most brilliant achievements which have yet been added to the imperishable chronicles of the profession of medicine.

The discovery and the development of the bacterial, or germ, origin of disease, and the application of the newly acquired knowledge, have revolutionized the practice of medicine along many important channels. Between the pathologist and the clinician a closer alliance has been formed, resulting in giving new insight into disease processes. The results of research conducted in laboratories have brought about a more definite solution of difficult problems in place of conjecture, as to the origin and spread of infectious diseases, as exemplified especially in the prevention of tuberculosis, cholera, malaria, yellow fever, plague and other diseases.

Dr. Clouston did not overstate the case when he said: "The sensational triumphs of modern surgery which Lister has brought about by a study of the microbic enemies of mankind, the good effects of anti-serums and the abolition of malaria by killing mosquitoes, are often looked on as miraculous tales of the supernatural rather than as the results of scientific study."

In the past few years, to chloroform and ether have been added local and spinal anesthetics to further illuminate the horizon of surgery and to enlarge the scope of its already brilliant achievements. Among other special advances in surgery, may be mentioned the application of anti-sepsis and asepsis; improved operative technique in the management of intra-peritoneal diseases generally and in the digest-

ive tract especially, and in surgery of the brain and nervous system; direct transfusion of blood by the anastomosis of arteries, and suturing blood-vessels, meaning the possibility of exchange of organs. The X-rays and various other electrical appliances for diagnostic and therapeutic purposes in both surgery and medicine have cleared our pathway to solution of many a perplexing problem.

The transformation that has taken place in hospitals of every character indicates an upward tendency. The crude methods of not many years ago have given away, in the evolution of these institutions, to means of scientific investigation, more accurate diagnosis and appliances for proper and scientific treatment. These, with the humane and skillful care of the sick and injured and infirm, have practically destroyed public prejudice and inspired confidence.

The exigencies of the times have lead to better equipped men for general practice and surgery, as well as for the specialties. Better academic preparation is now required of the medical matriculate. More emphasis is being put upon the importance of clinical training at the bed-side and in surgical demonstration. A more extended and thorough medical curriculum is required, and finally, a test of qualification is made by a state medical examining board. Notwithstanding this advance in the past twenty years, we have not yet reached that desired high standard in either the academic requirements or the medical qualifications for which the better element in the profession and the higher class medical school are striving. But this is forthcoming.

Viewed from the vantage ground of present achievement, greater things may be expected in the years to come. I am not in accord, however, with that charming optimism of Metchnikoff, which holds out for the future the possibility of the ultimate extinction of disease and a prolonged tenure of human existence. As long as vicious heredity, untoward environment, ignorance, weak and perverted wills exist, disease, infirmity and death, will cast their shadows over the pathway of mankind; and just as sure will the end come from sheer old age, which, like a "low-burning flame, flickers and finally goes out."

PREVENTION OF DISEASE.

To preserve health and to prevent disease

are the objects of the great modern science and art of preventive medicine, which is the highest development of our science. A wider knowledge and a more exact application of prophylaxis has become to be recognized as probably the most important feature of medicine, surgery, obstetrics and sanitary science. The results have been seen in the improvement of the health of the people, lessening the suffering of the living, saving lives and increasing human happiness. There is witnessed everywhere a general awakening, which is crystalizing in efficient organized efforts, under governmental direction and control.

This great movement to combat the enemies to health consists in efforts to bring about normal living conditions, improve the family and home life, reform and improve the methods of teaching and training children, secure adequate sanitary protection, prevent premature deaths, insure inspection and control of all sources of public water supply, maintain, wherever needed, efficient quarantine regulations, enact and enforce laws regarding pure food and drugs, establish a general system of vital statistics, etc.

In order to make the efforts of the boards of health, commissioners and other public custodians of the people's health, effective, public opinion must be aroused to an intelligent appreciation of the value of preventive measures in the most comprehensive sense. The government, in which lies the power to make and enforce proper protection to its citizens, has no higher duty than that of safeguarding their health. To do this, ample means is the first prerequisite. The next is the employment of well-equipped, thoroughly trained and conscientious public health officials. Means should be provided for the establishment of sanatoria for the tuberculous, and laboratories for original research in various diseases, such as typhoid fever, tuberculosis, epilepsy, insanity, cancer, etc.

Under the leadership of men, with brave spirits, who had the courage and capacity to lead, supported by a progressive public, and backed by a beneficent and able government, the greatest triumphs of sanitary science in the history of the world, have been recently witnessed, in the restoration of Cuba and Panama from pestilence and death, and in the sanitary record of Japan in its war with Russia. As other evidences of the results of the application of

modern knowledge of sanitary science, I point to Italy and Greece. The former has been practically reclaimed from the cursed effects of malaria. The latter, the intellectual decadence of whose people is said to have probably been due to malaria, is also being restored to its high place among the intellectual nations of the world.

The International Congress on Tuberculosis, just closed in Washington, was far and away in advance of any movement yet made in this country, toward demonstrating the extent and the magnitude of the fight against tuberculosis, and how stupendous have been the results in some places, in decreasing the mortality rate from this scourge. The papers and discussions heard at the Congress, and the exhibits seen there, were wonderful in their scope and variety, and will most surely spur on to further action by individuals and organized forces. The moving and eloquent story told by some was truly inspiring. Whether the question of the unity of the human and bovine bacilli was settled or not, the startling fact remains that, upon a fair estimate, there are in this country from 138,000 to 160,000 deaths a year from tuberculosis, and that 5,000,000 of our people, according to Professor Fisher, of Yale University, are doomed to death by this disease, and that the cost, estimated in money, to the people is more than a billion dollars a year. Does not this demand the united efforts of the medical profession, the public and governments everywhere?

INSANITY.

We have not yet attained that state of knowledge, and never will, when we can prescribe conditions which would absolutely insure brain health, yet we know enough to enable us to improve mental life, and prevent, to a great extent, mental deterioration or destruction. The most valuable asset of mankind is a strong and healthy mind. It would, therefore, seem proper that we should arouse a discontent, with a view of encouraging inquiry into conditions unfavorable to sound mental health.

The alienist and the metaphysician should no longer be left alone to work out the problems of mental alienation. If the family physician were more familiar with the early manifestation of abnormal mind, many a murder or suicide would be averted, and many cases of insanity prevented from going on to a chronic condition, or to incurable dementia.

It cannot be overlooked that instruction in psychiatry has been inadequate so far as many of our medical schools are concerned. "The most urgent need of medical education in America to-day," says Welch, "is the Psychopathic Clinic, where medical students, and physicians as well, may benefit by instruction in psychiatry, and whose scientific research into the causes and cure of insanity may be carried out unceasingly."

The psychopathic ward, or hospital and clinic, is already a realization in many of the university towns of Europe, as well as in several States of this country. It is worthy of note, and should be of special interest to physicians of this State, that there will soon be established in connection with the Johns Hopkins Hospital a model psychiatric clinic, and a professorship in psychiatry, to meet the demands of modern research and teaching in this much neglected branch of medical study.

The far-reaching practical importance of this matter is such that it cannot be much longer evaded in this State. Whether such an institution should be developed in connection with a medical school, as part of the general hospital system—in the form of properly equipped psychopathic wards—as a distinct State institution, or as a special feature of the existing State hospital service, is a matter that requires careful consideration.

There exists in the public mind much of the insoluble mysticism prevalent among our not very remote ancestors, who regarded insanity, and, in fact, diseases generally, as an inscrutable visitation of Providence as punishment for misdeeds. The people should be educated out of traditional prejudice against the public hospital for the insane. There is still a widespread impression that the insane patient must remain at home until he is ripe for the asylum, that is, incurable, generally. "The asylum," says Maudsley, "is too often regarded rather as a burying-ground for ruined minds than a hospital for the cure of brain diseases." Away with this cant about the stigma of being adjudged insane. Better seek early the removal of what produces the stigma. Says Professor Clifford Allbutt: "The stigma, if such there be, lies in the misfortune itself, and not in the red tape of the proceedings."

There should be a united effort on the part

of physicians and the intelligent laity to bring about that popular sentiment that would demand for our insane, epileptics and feeble-minded, the best care and treatment the financial condition of the State could possibly afford.

PREVENTION OF INSANITY.

It is to prevention, however, rather than to cure that we must look to the diminution in insanity. Indeed psychiatry should play an important role in preventive medicine of the future. Heredity, improper training in childhood, unhealthy environment and bad living methods, together with alcohol and venereal diseases, are responsible for a large proportion of the cases of insanity and mental defect.

As a predisposing cause, heredity can be traced to nearly fifty per cent. of cases. "The fathers have eaten sour grapes and the children's teeth are set on edge," is a doctrine that cannot be ignored. As Dr. Henry M. Mund, a distinguished alienist, tells us: "The knowledge should become universal that every individual represents the sum total of the vices and virtues, faults and perfections, strength and weaknesses of his remote ancestors, plus special morbid conditions or otherwise, which existed among his immediate progenitors."

The first step, then, in our efforts to reduce insanity and mental defectiveness, is by their non-production. Should State medicine longer withhold its directing influence from this great problem of adopting rational principles of natural and sexual selection in the propagation of our species? "Should not the State take cognizance of these things, which are more insidious and equally, if not more destructive or damaging to the race, than all infectious diseases combined?"

Let physicians in their professional capacity teach parents and children of the almost certain mental, or physical, or moral degeneracy in the offspring resulting from the union of two stocks already tainted with insanity, epilepsy, alcoholism, certain constitutional and other transmissible degenerating diseases and defects. Let the State enact prohibitive laws, with the view of protecting the race from disastrous diseases and invalidism.

While heredity is important as a predisposing etiological factor, it is not necessarily true that the offspring of the insane, the epileptic or

the mentally defective, are bound to follow in the footsteps of their diseased parents or grandparents. In a very large measure this tendency can be controlled by the individual. Proper living, healthy environment, personal hygienic habits, nourishing food, attention to bodily functions, abundance of fresh air and sunlight, sufficient rest, sleep and physical exercise, mental recreation, and avoidance of prolonged overwork and stress, will usually outweigh even the direful effects of a bad heredity. Our brains are, after all, largely what we make them.

Need I call attention to the significance of alcoholism in its relation to insanity and degenerative processes of the organ of mind, either as a cause or a symptom? This is a question which belongs largely in the province of scientific medicine.

The pernicious influence that alcohol, opium and cocaine exercises on the physical, intellectual and moral spheres of life, cannot be controverted. A further, thorough and impartial examination should be made regarding the alcohol question, and then the public should be given, in the plainest possible terms, definite answer to this most perplexing question: What real part does alcohol play as a medicine, as a poison, as a food, as a stimulant, as a narcotic and motor depressant, or other effect, or as a deterrent to the development of the race?

From a practical and from a scientific standpoint as well, it would, at least seem that the confirmed inebriate or habitual drunkard is a proper subject for legal control, both for the good of himself and that of his family and the community. He should be committed to an institution of the farm-colony type in which his remaining abilities could be utilized to some good purposes.

As a prophylactic, as well as humane, measure, there needs to be a more careful medical study of the sojourners in our reformatories and prisons. Many of these are moral delinquents, or mental degenerates, many inebriates, some actually insane. It would be better for the community and the future of our race if many of these, especially the habitual criminal, who are now sent from the prisons, were permanently segregated. We may confidently look to the State Board of Charities and Correction, recently established in this State, for valuable suggestion along this line of work.

SUICIDE.

Suicide is another difficult problem confronting us, which in recent years has rapidly assumed ominous proportions. In a recent magazine article, from an authoritative source, it was stated that, in 1881, the total number of suicides in this country was 605, or, at the rate of 12 per 1,000,000 of the population. Last year the number had risen to 10,782, or at the rate of 126 per 1,000,000 of the population. During the past eighteen years 120,000 suicides have been reported in this country.

No satisfactory theory as to the causes for this great increase has been given. But doubtless much depends upon these factors: Faulty early education and training, a weak or vicious heredity, effects of excessive use of alcohol, over-indulgence in the various dissipations of the times, stress and anxiety incident to the rush after wealth and worldly success, a moral cowardice and an unwillingness to carry the extra share of burden, apparent or real.

A study of the causes of suicide often reveals a pre-existing brain disturbance, which culminates in an overpowering morbid impulse to "shuffle off this mortal coil," yet in many cases, there has been no ascertainable morbid predisposition, or other evidences of an unbalanced mind. Occasionally one guilty of a capital offense may probably resort to suicide rather than face the inevitable consequences of his crime.

It has been claimed, and, I think, with good reasoning, that the influence of suggestion, due to the reading of details of suicide, published in the newspapers, is an important etiological factor. Certainly the imitative element has often been observed in persons mentally weak. An attempt at suicide by one patient in a hospital for the insane is usually followed by similar attempts by other patients.

EXPERT TESTIMONY.

My time is too limited to admit of more than a brief mention of an important subject which has of late been so much in the limelight: Insanity, as a defense in criminal cases. The impression seems to be generally prevalent that all insanity experts are "for hire" to the "highest bidder." This is a gross injustice to those alienists who are capable and honest. That there are dishonest medical witnesses, as there are shyster lawyers and corrupt jurors, no one

will deny; but should the entire company be judged by one unprincipled fellow? People who know absolutely nothing about insanity are ready to join in wholesale criticism of the opinion of any and all experts. Such criticism sometimes results in injury to the reputation of a competent, conscientious expert; consequently, the better class of alienists dislike to have any connection with such cases. Often the opinion of a competent alienist is essential to truth and justice. Unfortunately, we often see in the witness chair incompetent or unscrupulous fellows, posing as experts, men whose only purpose is to aid the lawyer in winning the case for "their side" regardless of the scientific truth. I have known of no such Virginia doctor.

This matter is of such vital importance, that it seems to me that our laws and practices should be amended, so as to put it in the power of the court to call the experts, instead of having them called by the defense, or the prosecution. The witnesses thus called should, of course, be subjected to cross-examination by either side in the case. This would at least prevent the possibility of the expert being partisan, which he should never be. Another plan which appeals to me, is to have the court appoint a commission of experts whose duty it would be to examine and study the case in question, and report its opinion to the court. The report should be open to both the prosecution and the defense and, if desired, used in evidence.

In at least two or three States it has been recommended that the organized medical associations furnish the courts a list of names of members of the profession, from which an expert, or experts may be selected, as required. The experts should always be paid out of the public treasury, and his compensation should be a liberal one. At all events, I trust that this Society and the Virginia Bar Association will take up this matter jointly and recommend a bill looking to the solution of this difficult problem.

PROTECTION OF ABNORMAL CHILDREN.

An important causative factor in the increase of nervousness and insanity is to be found in our faulty educational methods. The subject of overwork of school children at a tender age, and often under unhygienic conditions, both

in respect to person and environment, during the critical period of puberty and adolescence, is a serious one. It calls for the most careful consideration by the medical profession. Parents and teachers should be warned against the everlasting strain under which young children are constantly laboring to keep up with the prescribed course of study in our schools; particularly those children whose health is already in jeopardy from unfavorable heredity.

One of the greatest needs of the hour is a more extensive and systematic medical examination of all school children, especially those who show any evidence of physical or mental weakness or defect. Instead of the irregular, haphazard methods that usually prevail—each city or county doing the work in its own way and in its own time—there should be a well-organized authoritative power to direct intelligent efforts towards definite ends.

City and county school boards would do well to have medical members, whose advice and suggestions in sanitary and hygienic matters, and in the physical and mental condition of the pupils, would be of inestimable value.

There is a class of children for whom I make a special plea. It is the really feeble-minded. The well-to-do may employ trained teachers, or send their mentally defective children to special schools. The less fortunate poor, having no such advantage, their mentally deficient children have to remain at home, untaught and neglected, to grow up in intellectual darkness, doomed to a life of inutility.

Both as humanitarians and scientists, physicians should unite with the intelligent non-professional public, in urging suitable instruction for the mentally abnormal children, in special classes, auxiliary schools attached to the ordinary schools, or, perhaps, in separate institutions. Such children "don't know where they are going," but, we know, that "they are on their way"—to hopeless degeneracy, or to become objects of public care.

EDUCATION OF THE PUBLIC IN MEDICINE.

Educated and trained in the science and art of medicine, having unusual opportunities to know the needs of a community, qualified to appreciate the causes of disease and the means of prevention, the physician owes it to himself, his profession and the State, to educate public opinion in the direction of the promotion and

the development of means for relieving human suffering. It is his paramount duty to teach the people in matters pertaining to the preservation of their health, in order that they may be happy and useful citizens.

Dr. Joseph D. Bryant, recently President of the American Medical Association, enunciates a sound doctrine in these words: "Those physicians who regard the practice of medicine as a (purely) business enterprise should class themselves as brokers in a market of human affliction." The profession of medicine is essentially altruistic in character. Yet, there is no reason that the physician should not apply conservative business principles in the conduct of his practice, and have a proper estimate of the value of his professional services.

The public should be given, as far as practicable, a proper understanding of our work and our progress, our purposes and our aims; of their needs and our ability to supply them. We owe it to the great science we represent, to be frank and open in all our dealings with others, carrying always a cheerful spirit. As Dr. William S. Thayer says: "The physician has no higher public duties than the duty of simplicity, the duty of the avoidance of mystery in medicine, and the duty of truthfulness. Towards his patients I know of no more vital duty than the duty of optimism." There must be, however, a responsive and intelligent co-operation between the people and the medical profession. It is in this way only that we gather strength to direct and carry into successful operation measures for the betterment of the health of the community.

In his inaugural address before the American Medical Association this year, Dr. Herbert L. Burrell emphasized the following agencies by which the public should be educated in medicine:

First, judiciously edited newspaper articles, authorized by a responsible board of medical men; second, magazine articles written by skilled lay writers, inspired by medical men of sound knowledge and discretion; third, free public lectures by men who are authorities in their subjects; fourth, individual teaching by the family physician. The last, he regards, as the most potent agency of all.

MEDICAL LEGISLATION.

It is a solemn duty of physicians to take a

special interest, yes, take the initiative, in medical legislation. They should fearlessly advocate needed reforms and point the way to the creation of the necessary agencies having for their aims the prevention and the cure of disease and the advance of medical science.

Legislatures, being composed largely of men untrained in the consideration of such subjects, need to be frankly and intelligently informed by competent physicians. While we have not always impressed the law-makers sufficiently to get through all the legislation we desire, we have, nevertheless, succeeded to a measurable degree. Let us not lose patience or become irritated, but, with a strong will and a united force, and persistency, continue our efforts. The loss of many a good cause has been due to disastrous inactivity.

I have found that the legislatures of Virginia have been composed, with comparatively few exceptions, of gentlemen whose aims were for the welfare of the community. It is seldom that men in political life are not open to argument and conviction, certainly when presented in a tactful, judicious manner by an earnest, conscientious advocate. Some one has truthfully said that "the vehemence which we are too apt to display only excites the sensitiveness of the legislator—and when passion enters in, reason passes out of the door."

In order that we may go before the legislature of 1910 with the strongest possible backing and show of success, I would suggest that, at this session of our society, we appoint special committees, whose duty it shall be to co-operate with and aid our legislative committee in studying the situation and the apparent needs, and getting into line for good work. And at our next session we should analyze the recommendations of those committees, and give earnest and united support to whatever, in the judgment of the society, may seem proper. And then bills should be properly drawn and presented early in the session.

The subjects which seem to me to be worthy of such consideration are:

1. The physician's license tax (a matter about which we have already spoken in no uncertain tone).

2. Amendments in the medical practice acts; adequate protection of a credulous public

against the pernicious practice of quack fleecers.

3. Regulation of the manufacture and sale of impure, adulterated drugs, and "patent" and proprietary medicines.

4. Further restriction of the selling or distribution of cocaine and opium or "remedies" containing them.

5. Further improvement in laws relating to public health organizations; the registration of all births and deaths, and the systematic collection of vital statistics.

6. The establishment of sanatoria for consumptives; colonies for the epileptic, the imbecile, and probably the inebriate; increase of the funds to be expended by the State Board of Health in the excellent work already begun.

7. Uniform medical examination of school children and the teaching and the practical application of school hygiene; special schools for the training of backward or weak-minded children.

8. Statutory regulation of marriage of the unfit, the imbecile, etc.

9. Revision of laws regulating expert testimony.

If nothing else were accomplished, we would gain from such a study and the report of investigations a far more comprehensive understanding of these subjects than we now have, which would lead to concert of action.

MEDICAL ORGANIZATION.

The most valuable asset the medical profession can have, both as regards its own progress and welfare, and its usefulness and influence in the community, is a broad-gauged, strong organization. The fundamental objects of a medical society should be to encourage professional attainments, to "inculcate a high sense of professional honor," and a proper appreciation of ethical conduct, and to cultivate good fellowship and professional brotherhood.

Safeguarded by pure personal character, and the "highest motives of professional purposes and of public welfare," we can keep ourselves immune from suspicion of questionable conduct or of selfish and commercial purposes.

Organized forty years ago by a band of progressive, public-spirited doctors, the Medical Society of Virginia has grown, till now the membership roll has reached about 1,500. There are only a few reputable physicians in the State

who are not connected with the Association. Its potential and uplifting influence has been largely instrumental in bringing up to its present height the standard of medical qualification in the State, the elevation of medical knowledge, and in pressing on to higher professional ideals and accomplishments, and in creating more general public confidence in the science and art of medicine.

Each county and city of the State should have a local organization which should be in affiliation with the parent Society. There are now only thirty-five city, county and district medical societies in the State. There should be co-operation and co-ordination of all our forces.

Some day we should commemorate in a fitting manner the work of those pioneers in medical organization in this State, nearly all of whom have gone to that "bourne from whence no traveler returns." But, my colleagues,

"God be thanked that the dead have left still

Good undone for the living to do—

Still some aim for the heart and the will

And the soul of a man to pursue."

With this meeting our revised Constitution and By-Laws go actively into operation. Let us, gentlemen, give our "new instrument a fair test, and then, as occasion arises, make such alterations as may seem desirable to secure the best interest of the Society and the profession of the State.

Changes were made with the view that the affairs of the Society may be conducted more nearly in accordance with the modern methodical way prevailing in other similar organizations; that, by a more widespread representation in the official management, more personal interest would be manifested, and that, by a large representative committee, the Executive Council, putting into proper shape all business matters before they are submitted for final action by the Society, more time would be had for scientific papers and discussions.

Perhaps there are several important matters affecting the interest of the Society that deserve our attention. Unless, though, their adoption be urgent, it seems to me that it would be the part of wisdom to refer them to the Executive Council, with instructions to thoroughly investigate and report recommendations at our

next annual meeting. This would give ample time for reflection by every member of the Society, many of whom cannot attend this session.

The matters that probably should be considered are:

1. The publication of the entire transactions, including papers, etc., in bound volume—whether the large amount annually expended for this purpose is justifiable, and whether the greater part of the matter usually published is of practical value, are questions that should be carefully looked into.

2. The permanency of a place or places of the annual meetings in the larger cities; the establishment of a fixed home, and a library. It is time that we were collecting and storing away in some systematic method the writings of our own physicians and surgeons.

3. The division of the Society, at annual sessions, into various sections, in order to get through with the program of papers in a satisfactory manner, or else limit the number of papers presented.

4. The establishment of a fund to be used in the encouragement of original research, and probably efforts along other lines in the direction of the uplift of the science of medicine.

5. The question of the finances of the Society also needs to be considered, and, if practicable, some plan devised by which the everlasting stringency in our treasury department may be relieved.

In the words of an eminent physician, "Despite the fact that we are all human, and possess our fair share of human frailties, we are, with singularly few exceptions, all working earnestly, as best we can, in the search of truth and for the good of humanity."

Let us continue to work onward and upward, striving ever to add to the brilliant achievements already accomplished, for "every day and all day long the process goes on, a death of error, a development of truth." Take hope, for, in the words of a great statesman, "we are rising steadily to plains higher than we have yet known."

Each of us is needed in the firing line. Be not only urgers of reforms wherever needed, but doers of the work. Let us not only create a "storm of current which clears the atmosphere, but be the "trade wind which carries to port the freighted ship of a people's hope."

THE MEDICAL SIDE OF THE ALCOHOLIC PROBLEM.*

By T. D. CROTHERS, M. D., Hartford, Conn.
Superintendent Walnut Lodge Hospital.

Every advance of scientific medicine along etiological and clinical lines brings into increasing prominence the influence of alcohol in the causation of disease, and the necessity of recognizing this in the questions of diagnosis, prognosis and the various health problems which occur in every-day life.

No matter what the opinions or theories of the physician may be, the degenerations from alcohol must be recognized in the study and practice of medicine.

In private practice the symptoms of fever and local inflammations and localized pains, are very often traceable to alcohol which, when removed, is followed by recovery.

In the treatment of typhoid fever, pneumonia, and malaria, the fact that the patient has used spirits either in so-called moderation or excess is a very important one in the treatment.

The mortality of these and other diseases is very much larger and the complications more positive when it occurs among drinking men, than in total abstainers.

In hospital practice, the previous habits of the patient are very important factors in the treatment, and must be recognized in the diagnosis and prognosis. In the practice of specialists, the use of alcohol must be considered.

The oculist, the aurist, the throat and nose specialist, and the physician who treats mental and nervous cases, inquire with great minuteness as to how far alcohol has been used by the patient. The same facts are sought for, and studied by the obstetrician and the student of children's diseases.

A noted specialist said that it was of equal importance to know the habits of the parents in a study of the diseases of children. If the parents were drinking people, the treatment of the disease of the child was a matter of greater uncertainty, and more difficult.

In surgery the treatment of injuries, dislocations, fractures, and sprains will vary widely in persons who use spirits, from those who are abstainers. Wounds and injuries are more easily infected and heal more slowly, and are

followed by greater depression, lower vitality, and longer convalescence in drinking persons.

Blows on the head and concussions are followed by a greater variety and more serious symptoms out of all proportion to the injuries received in the alcoholic.

The mortality from surgical operations in the inebriate are larger than in temperate men, and in railroad surgery this fact is always prominent and to be considered. Modern surgical works suggest guarded prognosis where alcohol has been used by the patient.

This is based on the fact that the alcoholic has lowered vitality, greater metabolic derangements and feebler power of repair. Comparison of the mortality of diseases both medical and surgical bring out this fact very clearly.

Recently several authors have asserted that a large proportion of the so-called rheumatic cases are neuritis with an alcoholic origin, and that no case should be treated without first eliminating the possibility of alcohol as an etiological factor.

Another author considers proprietary medicines containing large quantities of spirits, and tinctures given in large doses as sources of complex and obscure diseases which should be investigated and traced to the real cause—alcohol.

Experience shows that many of the vague and complex symptoms of disease disappear by the removal of alcohol, whether taken in excess or so-called moderation. These are some of the facts which every-day observation confirms, fully sustaining the assertion of eminent authors, that alcohol is a cause of disease of equal magnitude to that of syphilis, and should always be considered in the diagnosis and prognosis.

Recent studies of vital statistics* show that the cause—alcohol—is very rarely mentioned probably because of the theory that it implies a moral disorder and reflection on the character of the diseased.

In reality, accurate inquiries reveal the fact that over fifty per cent. of deaths from pneumonia and Bright's disease occur in alcoholics. Cirrhosis of the liver, cerebral hemorrhage, and a number of diseases of the circulatory and nutrient organs occur most frequently in persons of this class.

Life insurance studies bring out this fact,

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and there is a continual struggle to escape responsibility for deaths which are so obviously the direct result of alcohol.

Most companies refuse to take insurance on persons who use spirits, except at higher rates, realizing that the duration of life is diminished by the use of alcohol, and many companies refuse high risks on all drinking men.

The medical side of the alcoholic problem becomes still more prominent in the statistical studies of insanity and mental diseases. The most reliable authorities indicate that insanity is the direct result of alcohol in from fifteen to forty per cent. of all cases.

In pauperism and idiocy fully fifty per cent. are traceable to the degenerations due to spirit drinking. In epilepsy thirty per cent. is asserted to be the lowest figure of the number of cases due directly to alcohol.

These are the highest and lowest estimates which all reliable authorities agree upon. In criminality a still more startling record is seen in the fact that fifty-five per cent. of the 149,000 persons confined in prisons for crime in this country were committed by persons under the influence of spirits.

The statement is made that over one-half million persons are arrested in this country and Canada for petty crimes and violations of the laws, and fully ninety per cent. of them are alcoholics.

Equally startling is the statistical study of railroad accidents and disasters in automobiles and steamboats, which indicate that over fifty per cent. were due to the mistakes of persons who were using spirits at the time or immediately preceding the accident.

These studies are not theories or opinions, but facts which bring the influence of alcohol prominently as an active cause in disease and perils of modern civilization.

Studies of pauperism and its causes and diseases which follow from the neglect of hygienic living show that alcohol is both an active and predisposing cause to an extent practically unknown, and at least beyond any present estimation of its influence.

The medical and physical side of the alcoholic problem comes out from these facts beyond all question, and the presence of great armies of alcoholic degenerates in police-courts, jails, almshouses, hospitals, insane asylums and

the slums of the cities is the most impressive evidence of the physical character and disease which follows from this source.

The failure to recognize the medical side and physical character of these cases in the early stages is one of the most startling delusions of civilization. To consider all such persons sane, sound and responsible until they reach the incurable, terminal stages, and even act upon the theory that it is a vice and moral weakness, is ignorant stupidity without a parallel.

In the business world all sentiments or theories become insignificant compared with the fact that the alcoholic and even the moderate drinker is enfeebled, irresponsible and unable to act with discretion and judgment.

All positions of responsibility where the faults of human judgment must be reduced to a minimum are held only by abstainers. The so-called moderate user of spirits is driven out as unfit and unable to do the work.

All large corporations, such as railroad companies, steamboat lines, insist with increasing absoluteness that only total abstainers shall be employed. This is the teaching of bitter experience which is growing every day, making more and more prominent the fact that the user of alcohol in any form is incapacitated, degenerate and diseased.

A recent illustration of this fact has been noticed in the discharge of men in the late financial depression. Drinking men of all degrees were laid off on the plea of "hard times," simply because their services could be more easily dispensed with and their value to the employer was growing less and less.

This is another most significant recognition of the physical side of the alcoholic problem. For over half a century there has been an increasing agitation in the public mind concerning the evils of alcohol and the best methods of removing them.

Innumerable societies and reform movements have come into prominence and have been growing steadily along different lines, and recently there is a startling change in public sentiment by the enactment of laws prohibiting the sale of spirits, and a movement that is not clearly traceable to the temperance reformers, spreading over all the country, demanding the restriction of the sale of spirits as a beverage and condemning its use in every way.

This is literally a great cosmic consciousness of alarm, and a recognition of the need of some positive physical means that will control and stamp out what is clearly becoming an evil of the greatest magnitude.

It is not the recognition of the ethical and moral side of the subject. It is a dim consciousness that alcohol and its evils, like the plague and scourges of the past, has a physical origin, and is the result of laws and conditions which can be known and prevented.

A great political party is appealing for votes with the one special object of controlling this evil, and the agitation is becoming more and more intense and personal, effecting widespread interests in every community.

Every legislature is passing laws which in some way will control or help to neutralize the evils which are supposed to gather about this menace to civilization.

Courts are fining and sentencing poor victims to jail with the same purpose, and the business world everywhere, realizing the losses and suffering which spring directly and indirectly from this source, is turning to political parties, societies and church movements for help.

In all this great movement, how absurdly pathetic is the stupidity of the physician who is indifferent, and takes no part in a matter that is so thoroughly scientific, medical and hygienic.

He goes on giving relief in the extreme stages without the slightest effort to point out the source and the laws of origin and development. In most cases he joins with the theorist and laymen, in the theory that the alcoholic evil is a vice and mere lapse of will power. The physician of all others is the natural teacher of the phenomena from alcohol and its degenerations.

He should instruct the public and not be taught by them. Thirty-eight years ago, a society of medical men was formed in New York City to bring this subject into the medical world. Its one object was to show that alcohol was a poison, and the conditions which both preceded and followed its use were those of disease, that could be cured and prevented.

This society still exists, and its efforts to bring the alcoholic problem into the field of medical study has been slowly and steadily in-

creasing. Its organ, *The Journal of Inebriety*, has for thirty-four years been publishing the evidence from the clinical and laboratory researches, showing that the only solution and means of prevention must come from the medical study of the facts and conditions, which can be gathered in every community of the country.

The work of this Society for the Study of Inebriety has been supplemented by a similar English society organized a few years ago. The evidence has been literally proven beyond all question that the stimulant and tonic properties of alcohol are errors, and that its real effects are narcotic and paralyzant.

The severe criticism which these views have encountered has only served to make them more prominent, and the old theories in the textbooks and the questions of vice and moral weakness offered in explanation are rapidly receding, and, although still heard in some circles, grow more and more untenable with every advance in exact science.

Medical study of inebriety shows that it grows up from distinct causes which are both inherited and acquired, and are always associated with exhaustion, cell starvation and poisoning, and that given certain conditions in certain surroundings, inebriety may be predicted with absolute certainty.

Thus neglect of hygienic living, bad nutrition, bad training, underwork, and overwork, living in clubs and saloons are certain to explode a train of causes which develop the neurosis of inebriety and alcoholism.

This is the same order of events by which germs, scattered in water and milk, develop into typhoid fever in the large majority of cases. In both it is specific causes developing in favorable soil, and producing exact results.

The epidemics of typhoid fever are traceable to germ causes which have had an origin, growth and development. The inebriate has grown from equally exact conditions of physical causes acting along lines of uniform laws.

Tuberculosis is one of the great vital questions of the day. The recent congress at Washington, discussing the causes and means of treatment, made no reference to moral forces or questions of will power. It was simply a matter of germ causes, their origin, growth and prevention.

The disease of inebriety and alcoholism is of greater magnitude, infecting every condition of life with more serious consequences than tuberculosis, and yet the physical causes are practically unknown, and an army of laymen are trying to prevent it as a moral evil.

Every advance in sanitary and mental science brings into prominence the physical causes of this disease, and with it amazement, and wonder why the medical profession have not been the students and teachers of this subject.

There is something startlingly absurd in the indifference and critical sneers of the medical profession concerning the extreme theories of reformers in their efforts to control the evils of alcohol, instead of taking up the subject themselves and becoming teachers and leaders, are like miserable camp followers far in the rear, shouting to the men on the front how to conduct the battle.

Medical men by their constant observation of the facts and phenomena of the physical laws and psychological forces which develop or destroy life, are best fitted to make the alcoholic problem a study. Of all others they are in the closest contact with the physical and psychological forces, both acquired and inherited, which develop into inebriety and alcoholism.

The psychosis and neurosis of inebriety is emphatically a medical study as much as neurosis and infectious diseases, and yet from want of study, and the prevalence of theories, it is left to laymen and reformers.

They recognize the dangers, and with a zeal and energy worthy of better cause, struggle to overcome and prevent its influence. What a reflection on the scientific training and failure of medical men to have societies formed, and great church movements organized, to study and understand the means of prevention of a sanitary evil which the physicians of all others should be the first to indicate methods of relief.

A parallel to this would be crusade movements of laymen and clergymen and reformers, holding revival meetings and warning the public how to avoid typhoid fever, tuberculosis, diphtheria and other diseases, and pointing out the moral causes and means to overcome them.

The great sanitary subjects of fevers and tuberculosis are recognized, and medical men are considered as proper teachers and students,

while the equally great subject of alcoholism is neglected; yet all unconsciously every advance is a call to the physician and appeal to his intelligence and public spirit for help in a problem, the solution of which there is a dim consciousness must at last come from the physician.

The medical side of the alcoholic problem has a very intense personal interest to each one of us. There is no community or neighborhood in which these poor victims are not seen. Not infrequently they develop in our own firesides and among our best friends and associates, and when they reach extreme stages appeal to us for help.

In the beginning when we could have helped them, the miserable theory of vice and feeble will power obscured all efforts along rational lines with terrible results. Later, when the condition becomes urgent and the physical state is unquestioned, then the family physician consents to send him to some gold cure, and with quack methods.

Then a period of delusional exultation of a cure, and hopeless despair at the failure following each other with increasing rapidity, and finally, the insane asylum and death ends the drama. Thoughtful physicians in every community note such cases, and with it the regret that they could not have done something more than give advice and placebos, and regret that they did not understand something of the mysterious neurosis and psychosis which destroyed the victim. It is this strange failure to recognize the physical phenomena of this disorder that has made it possible for quacks with gold and unknown remedies to do what every trained physician should and could, with far more accurate results.

It is still more startling for physicians to consent to these quackish methods of cure and acquiesce in the theories of societies and churches that moral means are the only prevention, thus practically denying the medical side of the subject.

A patient appealing to the physician with a high temperature, cough and decreasing weight, attracts attention at once and receives medical treatment, but if he comes with an alcoholic breath, deranged circulation, a history of a recent toxic attack and other physical signs, moral

advice, the Keeley treatment and placebos are all that is offered.

Every physician is both directly and indirectly injured by the prevalent theories of the harmlessness of alcohol and its value as a food and stimulant, because these are contradicted by experience and observation, and such theories actually increase the difficulty of successfully treating such cases for any sort of disease.

It is such theories as this that diminish the ability of patients to pay the legitimate fees of physicians and increase the taxation and losses in the community. Some one blunders, and the chronic, parietic, demented and delusional inebriate is the result.

Long periods of suffering, loss, disaster, disease, degenerations and crime all could and should be prevented. When the physical condition of inebriety is recognized at the beginning, it can be stamped out as positively as yellow fever is presented by destroying the mosquitoes.

The Anti-Alcoholic Congress at Stockholm in 1907, with its fifteen hundred delegates and official representatives from nineteen civilized countries of the world, was unmistakable evidence that a change had taken place, and that the medical side of the alcoholic problem is rapidly being recognized by the leaders in the medical world.

Every public health bureau and association in this country, and every great sanitary movement to prevent disease and remove its causes indicate that the alcoholic problem is a physical one not to be reached by moral theories or explanations, but by an exact study of the facts and their meanings; also, that the toleration of the saloon and theories which permit alcohol to be used as a beverage are delusional of the most destructive character, which must be examined at the bar of exact study.

Clinical experience and laboratory facts are accumulating in every direction in such magnitude and exactness, sustaining the assertion that the whole problem is a medical and hygienic one, and thoroughly preventable in the early stages, and curable to a certain degree at all times.

Laymen and reformers present innumerable examples of so-called cures as evidence of the value of their hypnotic remedies, and this is

additional evidence of the physical character of the evils, and the tremendous possibilities, when the subject comes into the medical world for exact study.

Public sentiment is fast crystallizing the conviction that alcohol should not be used as a beverage, and science is sustaining this sentiment. The moderate drinking of to-day is the indication of excessive drinking of to-morrow, and the armies of alcoholic defects and degenerates can be predicted and traced from stage to stage beyond all question or theories.

Without any doubt, this whole subject will come into the realm of medicine in the near future, and the physician will be teacher and leader and the vast tides of evil will disappear. The legal efforts to control this question by fines and imprisonment which actually recruits and trains a more degenerate class, the wasteful and most extravagant efforts by reformers and philanthropists, and the wild impracticable legislative efforts by law, all fail and press the great central fact home to the physician for help.

Medically the alcoholic problem is not alone the question of alcohol, but of the conditions which makes it possible for alcohol to be used, and the absolute disease and degenerations which both precede and follow from it.

The practical question now is, how long shall the physicians follow current theories and neglect to take up this subject, how long will the question of the exact action of alcohol be discussed as if it was the final topic when the results from the use of alcohol are neglected, unrecognized and increasing?

Already a small van-guard of physicians have entered this field and are urging the profession to recognize the disease and insanity of inebriety. First medical colleges must give instruction and prepare the students to become teachers in the community, and leaders in the means of cure and prevention.

Second, every medical man should take up this subject as a medical hygienic one and treat the moderate drinking man, and prevent the disease in the early stages.

Third, every medical man should respond to the call and come forward and be a teacher and leader and direct public sentiment how to overcome, neutralize and prevent this last great evil of modern civilization.

The great waves of temperance reform are voices calling to the doctor for help and council, calling for assistance. This is the great new field and medical side of the alcoholic problem, whose possibilities for practical work exceed the wildest dream of the enthusiast opening out in every direction.

PRINCIPLES CONCERNED IN THE DIAGNOSIS OF INTRA-ABDOMINAL TUMORS.*

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(Continued from Last Issue.)

TUMORS ARISING BENEATH THE ABDOMINAL WALL.

These may pass through the abdominal parietes or may remain within the abdominal cavity. In cases of the latter, contraction of the abdominal muscles always causes the swelling to become less conspicuous, flattened, or even to disappear from sight and touch. This test may be applied by directing the patient to rise in bed with arms folded, cough, or to contract the abdominal muscles either voluntarily or reflexly upon application of the cold hand of the examiner. Persistent rigidity of the abdominal muscles from peritonitis and other causes may necessitate general anæsthesia to discover such a tumor; crying in children will generally cause the tumor to escape observation.

The chief features of *transparietal tumors* are as follows:

With a few exceptions, no swelling passing from within, through the abdominal wall, is made less conspicuous by contraction of abdominal muscles. They are often made more prominent by the applied test and crying of children. The intra-abdominal portion of a malignant adherent tumor or an abscess may be rendered less conspicuous, and thus effect the general size or shape of the swelling, but the extra muscular portion, when such is present, is generally made at least relatively more conspicuous by such a test. In cases of cysts of the omphalo-mesenteric duct or urachus, occlusion has completely occurred at the umbilical end, the swelling is wholly intra-abdominal and possesses the characteristics of

such tumors. Most transparietal swellings can be reduced wholly or in part by proper manipulation during muscular relaxation, aided by gravity. If such reduction is accompanied by gurgle the tumor is gut.

INTRA-ABDOMINAL TUMORS

All these are rendered inconspicuous, flattened and difficult to locate upon contraction of the muscles, thick abdominal wall, gas or fecal distention of the bowel, and by gas or fluid in the peritoneal cavity.

They may be classified as—

(a) Swellings without accompanying signs of inflammation.

(b) Swellings with such signs, either local, constitutional or both.

Any swelling involving either the parietal or visceral layer of the peritoneum, or the omentum, either primarily or secondarily may as the result of adhesions present the signs of a congested membrane, later becoming thickened and adherent, *i. e.*, a traumatic peritonitis, but unless infection is present, does not cause inflammation.

Inflammation of the tumor itself without involvement of the peritoneum is accompanied by different signs than those of peritonitis, and may be distinguished.

Non-inflammatory swellings may subsequently become inflamed. The structure in which they are located is predisposed to infection as a result of impaired function or mechanical disturbance.

Non-inflammatory general abdominal swelling.—Gaseous tumors are everywhere tympanitic; if distension is extreme the muscular wall may be tense but not truly rigid. The transverse lines between the bellies of the recti are not distinct.

Gastro-intestinal distention.—Atonic distention is caused by rickets, spinal paralysis, muscular paresis from over distention, as in chronic constipation, gastro enteritis with fermentation.

Mechanical distention is caused by any obstruction of the digestive tract or by local tumors.

With gastro-intestinal distention there is always tympany and generally belching and passage per rectum of flatus. If distention is extreme, peristalsis may be arrested and flatus not passed. There is always impairment of gastro-intestinal function. Tension of the parietes is distinctly less than in pneumoperi-

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toneum. In cases of mechanical obstruction the tension may be extreme. Adynamic distention from peritonitis is accompanied by the signs of peritoneal inflammation.

Pneumoperitoneum.—This is caused by rupture of a hollow air-containing viscus. There is profound collapse and rapid peritonitis, preceded by a history of some cause. Liver and splenic dullness anteriorly are obliterated, or nearly so. These areas of dullness are elevated or lessened by gastro-intestinal distention, but not obliterated.

Free fluid in the peritoneal cavity.—Causes: Ascites; blood from the rupture of a solid viscus, aneurism, or the open end of a smaller blood vessel; ectopic pregnancy; urine from ruptured bladder; contents of ruptured cysts, particularly ovarian.

In all cases there is with the patient on the back less anterior swelling than in the flanks; dependent dullness and superincumbent tympany, movable in location, dependent upon change of patient's position. When fluid is large in amount fluctuation is noted. When distention is prolonged linea albicantes are produced.

Ascites is generally due to portal obstruction, but may be caused by tuberculous peritonitis, or by solid tumors, especially of the ovary. The history and signs of such are to be sought. There is gradual onset of symptoms; often the superficial veins are prominent; caput medusae and protrusion of umbilicus are noted when due to portal obstruction. When tuberculous disease of the peritoneum is the cause there are generally signs of low grade type of inflammation.

Rupture of any blood or fluid containing viscus is accompanied by immediate profound collapse. There is a history of signs referable to the particular organ, often trauma. When caused by rupture of an aneurism the history of this may be elicited, and when from any cause, the constitutional signs of internal hemorrhage are present.

In case of rupture of an ovarian cyst a feeling of something giving away is noted, the local tumor disappears, immediate collapse, and soon peritonitis are observed.

Solid growths, or cysts, may fill practically the whole abdomen. In early stages they are localized.

Pelvic tumors include the following:

Local non-inflammatory tumor.—Distended bladder; distended uterus.

Pregnancy—after fifth month fluctuates; retained menses.

Enlarged uterus.—Chronic metritis; subinvolution; hypertrophy.

Uterine tumors; myoma, carcinoma, rarely sarcoma.

Distended tubes; hydro-salpinx; ectopic pregnancy; hematocele and cysts of broad ligament.

Ovarian cysts and tumors.

Tumor of retained testicle.

Tumor of pelvic bones and joints; osteoma, chondroma, sarcoma of ilium and sacrum.

Tumor of pelvic lymph nodes, generally sarcoma or carcinoma.

Cancer of the sigmoid.

Impacted feces in sigmoid.

Aneurism of iliac artery.

Tumors of the upper abdomen may be enumerated as follows:

Tumors of the left lobe of the liver.

Dilatation of stomach—may fill whole abdomen.

Cirrhosis of stomach, hypertrophy of pylorus or transverse colon.

Cancer or colloid of stomach, pancreas, peritoneum, omentum, intestine, transverse colon.

Sarcoma, or enlarged mesenteric omental or lumbar glands, omental cysts.

Local distention of intestine from volvulus or bands.

Fatty tumor of omentum.

Abdominal aneurism.

Osteoma or chondroma of spine.

Pregnant uterus.

Distended bladder.

Floating kidney or spleen, rarely liver.

All tumors may become central when large enough.

Right side: Floating or downward luxation of liver.

Hypertrophic cirrhosis or amyloid disease of liver.

Tumors or cysts of liver, or gall bladder.

Tumor of caecum.

Left side.—Enlarged spleen, floating spleen.

Splenic tumors and cysts.

Either side.—Floating kidney.

Tumor, cyst or distention of kidney.

Hypernephroma, peri-renal lipoma.

Distended colon (ascending right, descending left).

Aneurism, renal, iliac.

Tumor of retained testicle.

Encysted collections of free fluid may occur in any location, and are difficult to recognize.

Distended bladder may be pushed away from median line.

Tumors with either local or constitutional signs of inflammation, or both.

(1) General.—General suppurative peritonitis. The symptoms of this need not be enumerated.

Tuberculous peritonitis. This is not true peritonitis, but simulates it. There is slowly rapid onset; all local symptoms are less severe and more prolonged; there are signs of tuberculosis elsewhere. There is conspicuous ascites, and relatively inconspicuous shock. It is often secondary to tuberculous enteritis or salpingitis.

(2) Local. The most urgent of these is abscess, or inflammation in any structure, or any already existing tumor. These are most commonly appendical, and pelvic in origin.

Until peritonitis supervenes the pain, tenderness, etc., are deep-seated, rigidity is less marked, and may be absent. Until obscured by peritonitis, symptoms referable to the organ involved are prominent, and in most cases constitutional symptoms (hectic, etc.) are marked.

When inflammation extends to the peritoneal covering, board-like rigidity often obscures, or renders difficult examination of the tumor. Auscultation should note a friction sound at first, and weakened or lost peristalsis. Later, adhesions and pus develop.

Diagnosis of the location of tumor: Smooth, even enlargements point to general enlargement of a solid viscus, to distention either fluid or gaseous of a hollow one, or to a unilocular cyst, or large abscess. In case of distention with both air and fluid, splashing may be elicited. Solid enlargements and gaseous distentions do not fluctuate. The former are dull to percussion unless overlaid by stomach or intestine; the latter tympanitic.

The pregnant uterus after the fifth month is a fluid-containing viscus; before that fluctuation is not elicited.

In a gall bladder distended with tenacious viscid bile and mucus, and in certain ovarian

cysts, fluctuation may not be detected. Unless certain precautions are applied when making the test, particularly in patients with thick, rigid abdominal walls, the test may be misleading. Multilocular ovarian cysts may not show the sign. In the case of abscess deeply located the test is useless. Free fluid in large amount always fluctuates, as does also a distended bladder, unless almost to the point of rupture.

Nearly all intra-peritoneal tumors move downward with inspiration; upward with expiration. This is most marked in those in relation with the diaphragm, enlarged liver, or spleen, or tumors of these organs but it is also noted in tumors having a lateral attachment in the pelvis—as ovarian tumors, tumors of retained abdominal testicle. Dense adhesions may interfere with mobility, and when located at the cecum, or in the vertical portion of the colon, this sign is of little use, and may be absent.

Tumors of deep seated fixed location (duodenal) show little, or no mobility. In case of a mass, particularly a small one of the omentum, or small intestine, the downward pushing effect of the diaphragm may be lost before the tumor is affected.

Audible and visible peristaltic movement is confined to the distended thick-walled stomach and intestines.

Tumors of infra-peritoneal origin are little if any affected by movements of quiet respiration. In case of distended bladder, enlarged and distended uterus, this sign is generally absent. With solid tumors of infra-peritoneal origin respiratory mobility is not to be expected.

Mobility upon palpation occurs in all pedunculated tumors, and always in an arch, the center of which is the pedicle attachment.

Gall bladder swellings are attached to the liver; renal cysts to the kidney. Floating kidney has for its pedicle the ureter. The uterus and bladder are fixed below in the median line. The pedicle of the small intestine is the attachment of the mesentery to the spine; gastric swellings being held by the œsophagus and lesser omentum, move freely from side to side and upward. The range of mobility of tumors of the ascending and descending colon is greatest laterally, and even in this direction limited. Tumors of the transverse colon and mesentery move in all directions. In case of wan-

dering liver, kidney and spleen, the normal location of these organs is vacant, or filled with intestines, while the notched spleen, broad, heavy liver, or reniform kidney, with perhaps the renal artery can be felt in an abnormal position. The pedicle of an ovarian cyst is in the lateral portion of the pelvis. Any pedunculated tumor may give symptoms of torsion. Through the force of gravity movable tumors exhibit changes of location with change of the patient's position, and in many instances it is necessary to have the patient do this to discover a mass.

The immobile tumors include abdominal and iliac aneurism, sarcoma of retroperitoneal glands, and all sessile growths in relation with fixed structures. Dense adhesions surrounding any tumor cause fixation.

Brisk purgation often removes intestinal concretions and impacted feces, while tumors of the walls of intestines are made recognizable. Impassable obstruction from volvulus, or bands is rendered worse, and the test may result in rupture of bowel.

Gastric and colonic distention may establish the relation of tumors to the stomach and bowels. Points of complete obstruction limit distention; masses in the wall of the gut make this obscure; retroperitoneal growths become covered with tympany.

With the patient in the Trendelenburg posture a line of tympany will be noted at the lower limit of the intestines. This is pushed downward by growths from above, and upward by growths from below. In the case of large ovarian or other large lateral pelvic tumors, tympany is pushed up, and to the opposite side. Dullness is uninterrupted from the point of origin of growth.

Pelvic examination will generally determine such origin of tumors. Proctoscopic examination is demanded when signs point to the bowel.

I repeat, that alterations of function point generally to the organ involved. Urinary symptoms with hematuria, pyuria, etc., point to the kidney. Jaundice and biliuria, to liver and gall bladder. Portal obstruction is shown by ascites with caput medusæ. Menstrual disturbances and vaginal discharge suggest pelvic disease, though alone are never reliable. Gastro-intestinal symptoms favor the thought of stomach and intestinal disease, though they may occur with any abdominal affection. Ex-

cessive fat and meat in the stools and glycosuria suggest pancreatic disease, though too much reliance must not be placed in these signs. The recent so-called pancreatic tests of the urine are promising, but not positive signs of pancreatic disease.

Nature of the tumor.—The signs of pregnancy should be sought in most cases of abdominal tumors in women.

The catheter will generally evacuate a distended bladder, though it may fail in case of constriction from the presence of such a cyst in a hernial sac, or stricture, or elongation of the urethra. In case of elongation of the urethra from adhesions, enlarged prostate, and a retroverted gravid uterus a long rubber instrument and care are required. General anesthesia invariably causes the disappearance of phantom tumor. Bony and cartilaginous tumors are shown in a skiagraph.

Free blood is accompanied by signs of internal hemorrhage. Abscesses and inflammation are characterized by local and constitutional signs of inflammation. Solid growths or irregular contour and of moderate density are characteristic of sarcoma and carcinoma. Osteoma and chondroma are extremely hard. Gall stones may sometimes be felt as nodules. Sarcoma is often associated with dilated and tortuous veins on the skin. Pouting umbilicus is characteristic of ascites and late pregnancy; with earlier pregnancy and large ovarian cysts the navel may be level with the abdominal wall; with adherent ovarian cysts it is often retracted, or pulled out of normal position. Any cystic swelling having an exit for fluid may be intermittent and recurrent. Hydronephrosis, pyonephrosis, hydro- and pyo-salpinx, and occasionally the gall bladder constitute the intermittent tumors. In all cases of doubtful tumor of the loin ureteral catheterization should be employed. Aneurism gives an expansile pulsation bruit and thrill, and is always associated with arterio-sclerosis. Pressure on the vessel above affects its size. Aneurism must not be confused with an abscess in contact with an artery.

Sarcoma and congenital cysts of the kidney and enlarged mesenteric glands are common in children. Carcinoma with great cachexia is found with great rarity before the age of forty. Tuberculous disease occurs in young adults and children. Gumma is confined to syphilitics.

Amyloid disease of the liver and kidneys occurs late in patients affected with chronic suppurative processes. Cirrhosis of the liver occurs mostly in alcoholics, but is not confined to them. Benign tumors may occur in any one. They are of slow growth, small and cause few symptoms.

Hydatid disease is rare in the United States, though it is occasionally found in the liver in people who have exchanged kisses and echinococci with dogs. It is of slow growth, rarely fluctuates, and hyatid fremitus may be detected.

Great splenic enlargement with severe anemia and lymphatic disease point to Banti's disease; when there is a preceding history of chronic malaria it is ague cake.

Subphrenic abscess is retroperitoneal, difficult to distinguish from pneumothorax, hectic is severe, oedema posteriorly is common. This may necessitate exploratory puncture for its recognition. History of a cause is valuable.

Pancreatic cysts, fluid collections in the lesser peritoneal cavity and encysted collections anywhere are difficult to recognize.

Tumors of the adrenal glands are indistinguishable from those of the kidney. Sometimes the signs of Addison's disease may be noted, and premature growth of hair particularly in the pubic region, with hypertrophy of the external genitalia are valuable differential signs.

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PERFORATING WOUNDS OF THE UTERUS. INFLECTED DURING THE COURSE OF INTRA-UTERINE INSTRUMENTATION.

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- A. GENERAL CONSIDERATIONS AS TO THE NATURE; AS TO CAUSES: PREDISPOSING; EXCITING.
- B. AN ANALYSIS OF ALL THE CASES PUBLISHED IN THE AMERICAN, ENGLISH, FRENCH AND GERMAN LITERATURE FROM 1895-1907, INCLUSIVE.*
- C. CONCLUSIONS.

GENERAL CONSIDERATIONS.

Perforations of the uterus can and do occur

*All the literature to which I have had access. The figures and letters included in () refer to corresponding figures, etc., in the References appended to this article, which article, because of its length, will have to be continued in successive issues of this journal.

with the most startling ease. It is difficult to determine the frequency of this accident. Operators, as a rule, are unwilling to give publicity to such an occurrence happening in the course of their intra uterine instrumentation. There is probably no gynecologist in the world of large experience, who has not met with this accident perhaps several times in his work. (Baldwin I.) In the reports of 3172 consecutive autopsies held between February, 1898, to February, 1908, at the Cook County Hospital, not one case of perforated uterus is recorded. In all cases of abortion and in all the cases of pregnancy, treated at the same institution during the years 1903-1907 inclusive (5 years) 495 abortions, 2343 pregnancies, only three perforations of the uterus occurred, 2 died (autopsy denied), one, treated expectantly, recovered. By diligently searching the American, English, French and German literature from the year 1895 to 1907 inclusive, I have been able to collect 160 cases of uterine perforations due to perforating wounds, inflicted during the course of intra-uterine instrumentation. In Hebreysend's Thèse, (Paris, 1901, Les Plaies perforantes de l'utérus,) will be found some cases not included in our table. They do not in any way confirm our conclusions. So as to more intelligently discuss perforations of the uterus, it is convenient to classify them into True and False perforations.

(a.) True perforations may be spontaneous; that is, they may occur without the aid of violence; may be secondary or consecutive, that is, they may follow an insult to the uterine tissues be that insult chemical, thermic, bacterial, or traumatic in nature. 2 a. b. The perforation may follow the insult immediately, or only become established after an interval of time. All uterine perforations due to perforating wounds are true perforations.

(b.) False, or pseudo-uterine perforations are not perforations in fact. 3 a.b.c.d. We will briefly discuss these pseudo-perforations, and then eliminate them from this paper. They have caused diagnostic errors, followed by operative mistakes, as needless laparotomies, as removal of intact uteri. The term pseudo-perforation is used to designate a condition capable of conveying to the operator the impression that he has perforated the uterine wall, when

in fact this mishap has not occurred. What, then, has occurred?

(1.) The uterine sound or other instrument may have slipped into a double uterus (uterus didelphys). 4. It may have entered a uterus unicornis.

(2.) The instrument may have slipped into the dilated uterine end of a Fallopian (d,e) tube (very rare) or into a bicornate uterus. Watkins (5 b.) after opening the abdomen found that what he had diagnosed the passage of the curette into the peritoneal cavity, was the passing of the curette into the Fallopian tube. In Hind's case, the uterine sound was introduced in the uterus before incising the abdominal wall; after opening the abdominal cavity, it was seen that the sound had threaded the whole length of the Fallopian tube. It was presenting at the abdominal orifice of the tube. In Floeckinger's case (5 a.) laparotomy showed that the uterine sound was in the oviduct. In Thorn's cases (5 d.) one uterus was myomatous, the other was latero-flexed and latero-verted. In the case of myoma of the uterus, the uterine sound was introduced 14 cm.; suddenly there was a lack of resistance; hasty removal of the sound followed upon this. On opening the abdomen, it was seen that the sound had penetrated for a distance of 3 cm. into the Fallopian tube. Ahlfeld (5e.) also reports a case in which, after laparotomy, it was seen, that the left oviduct had been entered by a sound, introduced into the uterus. Nevertheless, this occurrence, the introduction by way of the uterus, of any instrument into the Fallopian tubes, is very infrequent, so infrequent that its possibility has been denied by competent observers, because:

1st. Under natural conditions, the lumen of the uterine end of the oviduct is so small that it is only with difficulty that one can introduce a bristle into it.

2nd. Under normal conditions the broad ligaments and also the ovarian ligaments maintain the Fallopian tubes in a transverse position in the pelvis.

Lawson Tait was never able on the cadaver to sound the tubes through the uterus. He maintains that under normal conditions, it is impossible to introduce by way of the uterine canal an instrument into the normal Fallopian tubes. Catheterization of the tubes is more lia-

ble to occur in the presence of such pathological conditions, as uterine latero-versions and latero flexions, after interstitial gravidity, after hematometra, etc., etc.

3rd. The instrument may have slipped into a small cavity, which has developed in the interior of a uterine fibro-myoma.

4th. The sudden ballooning or relaxation (3 a.b.c.d.) of the uterus may also convey to the operator the impression, that he has perforated the uterine wall. There is such a condition as atony of the uterus. The fact that at all periods of sexual life, the uterus has the property of alternate contractions and relaxations, is regarded as proved by all physiologists. Contraction and relaxation are properties inherent to all muscular tissues, and the uterine muscle is not an exception to the general rule. Keiffer's experiments, bimanual examinations, etc., point to a more or less periodic variation in the tone of the myometrium.

During curettage one often notices a uterine lengthening of 1, 2 or 3 cm. It is no longer claimed, just because the curette in these cases is not kept in constant contact with the uterine wall, that these uterine lengthenings are instances of perforations of the uterus. They are evidences of uterine relaxation. The system of uterine blood vessels is adapted to expansions and contractions. R. DeBevis (3a.) in *La Semaine Medicale*, Paris, 1906, Vol. 26, p. 253, has an excellent and exhaustive article on pseudo-perforations of the uterus.

Though this condition, pseudo-perforation, is infrequent, its existence can no longer be denied. In Craig's case (6), the operator, supposing that he had perforated the uterus, opened the abdomen; he then found the uterus to be uninjured absolutely. In the case reported by N. Gheorghiu (7) the removed uterus showed no trace of perforation. Kossman (3 b.) bears witness to similar facts.

Perforating wounds of the uterus, especially of the pregnant uterus, can be inflicted from above (8), can occur during the course of a laparotomy, can be associated with penetrating wounds (gunshot wounds, stab-wounds and similar injuries) of the abdominal wall, of the gluteal (9) and other regions; can occur during the course of a delivery. Wounds so inflicted, though they involve the same organ, though they also extend through the entire

thickness of the uterine wall, demand, owing to their method of infliction, owing to their portal of entrance, owing to their almost invariable association with serious visceral or other injuries, to be considered separately from the perforating wounds of the uterus that form the subject matter of this paper.

We will consider in this article only such perforating wounds of the uterus as are due to violence, inflicted from within the uterine canal; that is, only such perforating wounds in which the vulnerating agent has either been introduced through, or has traversed the uterine cervical canal, before perforating the uterine wall. The element of trauma is essential, is indispensable to the accurate conception of these perforations.

In the course of intra-uterine instrumentations, diseased and healthy (10) uteri, (cases a, b, c, d, e, f. etc.) have been perforated and most disastrous results have ensued. Wounds of the uterus, like wounds of other organs or tissues, are solutions of continuity of tissue. They are always of sudden occurrence and are always due to the direct application of mechanical violence.

To avoid misunderstandings, a distinction must be made between penetrating and perforating wounds of the uterus. The former only enter the uterine wall; the latter, transverse its entire thickness. Therefore, the distinctive characteristic of perforating wounds of the uterus is that they involve the entire thickness of the uterine wall. All the coats, or rather, the layers of the wall of the uterus are interested—the mucosa, the muscularis, and the serosa, (in those portions of the uterus that are covered by the peritoneum).

The uterine perforations discussed in this article were consecutive to some intra-uterine maneuver and always immediately so. In this class of uterine wounds, the vulnerating agent established a direct communication between the uterine and some adjacent cavity; the peritoneal cavity (11) most always; rarely, the vaginal (12—cases a. b. c.) or the vesical cavity (13 case a); still more infrequently, the lumen of the gut. In other cases, the perforating instrument, after having pierced completely through, a portion of the uterine wall not covered with peritoneum, enters the peri-uterine connective tissues, penetrating between the

folds of the broad ligaments (parametrium) (14) (cases a. b. c.). If the violence still continues to act, the vulnerating instrument may perforate one or both layers of this ligament and thereby also enter the peritoneal cavity (15) (cases a. b.). The perforating instrument may enter the vesico-uterine space (16) (case a); may enter and lodge in the space of Retzius (17) (case a.); may enter and lodge in the Douglas' cul-de-sac (16) (case a.).

Traumatic perforations can involve any portion of the uterine wall. In my two cases (19) the perforation, as is usual, as is almost always the case, involved the posterior wall; in Van Ripper's case (11), the rent was in the anterior wall; it extended from the fundus uteri to near the vaginal vault. In Harris' and Whitney's case (20), the anterior wall showed a transverse rent, about 1 1-2 inches in length. In case 21, the uterus was perforated from horn to horn and the perforation filled with omentum. In case 14 b, the perforation was situated at the anterior and left lateral surfaces of the supravaginal portion of the cervix. In case 22, the perforation was also in the anterior wall.

The perforation may be in the cervix uteri, as cases 23, 12 a, b, c; may be in the corpus uteri or may involve both; may be single, may be multiple (they are, most usually, single); may be small, may be large, as in case 24, in which the midwife produced a uterine rent 20 cm. long. In Ullmann's case (25), there were two perforations. In Schenk's case (26) there were three. In Werelius' case (27), the uterus contained seven punctures. The perforation may be barely visible; in one of my cases, merely a subperitoneal ecchymosis was present; may be large enough to permit the escape of a large portion of the omentum and of intestines through the rent, as in Hennert's case (28), in which four feet of gut had been pulled through the uterine rent; as in Holmes' case (29), in which intestines were found between the woman's legs; as in Congdon's case (30), in which the operator after pulling out 40 1-2 cm. of intestines into the vagina, twisted them off. As in Davis' case (89), during the course of intra-uterine maneuvers, the anterior wall of the uterus was perforated and the intestines damaged to such an extent that over fifteen feet had to be removed.

In case 31, the operator kept on pulling in-

testines until he had drawn out 6 feet of bowel which he cut off. This case terminated fatally. All the other cases mentioned above recovered. The perforation may be large enough, to allow the escape of the fetal head into the peritoneal cavity, case 32; may allow the escape of the fetus into the peritoneal cavity, as in Whitney's case (20). In Tait's case (33) nine months after the date of infliction of the perforation, the track of the curette could still be seen. The size and shape of the opening are to some extent dependent upon the size and shape of the vulnerating instrument.

The perforation may lead to the formation of permanent abnormal channels of communication between the uterine and an adjacent cavity, as in Dr. Lobdell's case (13) in which the perforation of the uterus took place directly into the bladder, and a permanent vesice-uterine fistula resulted; may lead to the permanent prolapse of a portion of the omentum into the cavity (cases 34 a and b). Usually, after the infliction of the injury, the vulnerating agent is removed. In some of the reported cases, exceptional cases, I admit, it was abandoned in place, and was either expelled per vaginam or eliminated by the aid of a slowly ulcerative, suppurative or other pathological process through newly created avenues. The perforating body may be eliminated through the rupture of a near or of a distant abscess, or may be removed at an operation, cases 35, 14a., or at autopsy, case 36. In one of Treub's cases (17) the bougie was imbedded in a retro-uterine abscess. In his other case (17), he removed by an incision the perforating catheter from the space of Retzius. In Johnson's case (37), the patient was laparotomized and the bougie, cause of the perforation, was found to be almost entirely folded in and covered by the omentum, an evidence of the effort of nature to repair the damage and to prevent injury of the abdominal viscera. In Thorn's case (18), the perforating bougie, after the patient had been laparotomized, was found lying obliquely in Douglas' cul-de-sac. In Talmey's case (10f), the perforating bougie was found lying in front of the proximal edge of the right kidney. In Bulard's case (38), the crochet hook was discharged through the anterior abdominal wall. It did not interfere with the continuance of gestation. In Perl's case (24), the needle or

trocac that had perforated the uterus, was removed, sometime after, from an abscess in the right inguinal region where it had become encysted after its passage through the uterine wall. In Fairchild's case (39), at laparotomy, the hairpin was found, high up, in the abdominal cavity, near the diaphragm. In Patru's case (14 a), the perforating catheter was found imbedded in the abscess palpable through the anterior rectal wall. By means of an incision made in the anterior rectal wall, all the pus was evacuated and the bougie removed. In Marchand's case (40), a Hegar's metallic dilating bougie No. XII perforated the uterus and was abandoned in the patient's body. After about a year of invalidism, she was laparotomized, and the sound was found between two folds of mesentery. It was removed; recovery ensued.

(Continued in Next Issue.)

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The Apothecary Publishing Co. 1908. Large 8vo. 133 pages. Cloth.

This book contains a list of the synthetic medicaments, "including their synonyms, sources, tests, solubilities, incompatibilities, medicinal properties and doses as far as known, together with such proprietaries as have similar titles." These medicaments are arranged in alphabetical order, in double columns. It is a most useful book as an addendum to any standard work on Pharmacology—giving the names, adult doses, uses, etc., of a great many of the newer remedies, not referred to in them. The number of these synthetic medicaments has increased so rapidly, since the last edition, 1899, that it has become necessary to "omit details of method of manufacture and descriptions not bearing directly upon their physical and medicinal properties." Such omissions we regret, since in this day of discussions of proprietaries, etc., *all* information concerning them would seem to be valuable.

Pain—Its Causation and Diagnostic Significance in Internal Diseases. By DR. RUDOLPH SCHMIDT, Assistant in Clinic of Hoprat von Neusser, Vienna. Translated and edited by KARL M. VOGEL, M. D., Instructor in Pathology, College of Physicians and Surgeons, Columbia University, etc., and HANS ZINSSER, A. M., M. D., Instructor in Bacteriology, College of Physicians and Surgeons, Columbia University, etc. Philadelphia and London. J. B. Lippincott Co. Small 8vo. 326 pages. Cloth, \$3 net.

This is not a college text-book, although well adapted to the uses of the clinical teacher. It is of special value to the practitioner in his every-day rounds of duty—helping him to trace pain to the organ or tissue affected. After a chapter on the functional modification of pain as influenced by position, motion, pressure, etc., is a chapter on topography in its relation to pain, such as in the shoulder, scapular region, epigastrium, atypical abdominal pains, etc. Headaches and neuralgias of various parts of the body are considered. Pains in the digestive system, the urinary system, the spleen, urinary and circulatory systems, etc., are all instructively considered as to causation and diagnostic significance. The practitioner who carefully reads this book will find in it much of practical, useful instruction, and will be made a better doctor by so doing.

General Surgery. By EHRICH LEXER, M. D., Professor of Surgery, University of Konigsberg. American edition, edited by ARTHUR DEAN

Book Notices.

The Newer Remedies—A Reference Manual for Physicians, Pharmacists and Students. By VIRGIL COBLENTZ, A. M., Phar. M., Ph. D., F. C. S., Professor of Chemistry in Columbia University, Department of Pharmacy. Fourth edition. Boston.

BEVAN, M. D., Professor and head of the Department on Surgery, Rush Medical College, in affiliation with University of Chicago. Authorized translation of second German edition by DEAN LEWIS, M. D., Associate Professor of Surgery, Rush Medical College, etc. With 449 illustrations in text, partly in colors, and two colored plates. D. Appleton & Co. New York and London. 1908. 8vo. 1041 pages. Cloth.

The progress of surgery in recent years has become so marked that it would seem that there is little more to add. At all events, it is worth while at times to stop and study and systematize what the past decade or two have brought to light; and the book under notice, well translated, and with annotations by the American Editor, fulfills its purpose admirably. Whoever becomes well trained in *general surgery* can easily enough make special surgery a success. This work teaches what is known about aseptic technic, as also about anesthetics—general and local. It tells about the management of wounds non-infected, and the dangers and effects of infected wounds. Necrosis, and injuries of soft parts, bones, joints, etc., and their treatment receive full consideration. Various important surgical conditions are next taken up, and tumore of all kinds are surgically considered—each chapter having a section on causation, diagnosis, results, etc. In short, the volume covers the whole field of *general surgery*, and is well adapted to the purposes of the medical college student as well as those of the practitioner. This work will undoubtedly remain a standard authority on its subject for years to come.

Editorial.

The Medical and Surgical Society of the District of Columbia.

At the annual meeting of the Medical and Surgical Society of the District of Columbia, held October 1st, the following officers were elected for the ensuing year: President, Dr. D. Percy Hickling; Vice-President, Dr. J. Ramsey Nevitt; Secretary and Treasurer, Dr. Llewellyn Eliot; Assistant Secretary, Dr. Truman Abbe; Executive Council; Drs. L. Eliot, W. C. Gwynn, W. H. Atkinson, W. P. Carr, and J. D. Morgan.

The retiring President, Dr. W. H. Atkinson, read an address in which he referred to the work of each member, showing the good quality of the material of which the Society is composed, and

urged the members to continue in their good work. He then took up the subject of his address: "An Appeal for Cleaning Back Yards," showing by photographs the unsanitary and sometimes filthy conditions which exist in back yards hidden from public gaze by high board fences. He advocated abolishing the board fence, and the substitution of iron or wire fences, as by the adoption of this idea crime and disorder will in a measure be prevented; the occupants of the premises will be stimulated from a sense of pride to keep their surroundings clean and sanitary, and the poorer classes would cease accumulating all sorts of junk and rubbish which belong to the city dumps.

Quoting official figures, Dr. Atkinson showed that 600 millions feet of lumber were used in the construction of our fences; this means a fence 7 feet high and 85, 714, 286 feet long, or 16,234 miles; taking 20 feet as the height, it would extend 30,000,000 feet or 5,681 miles. This lumber would cover 13,774 acres of land. In time these fences must be renewed. As a matter of economy the board fence should be abolished by legal enactment and the open iron or wire fence be substituted. This is a good, as well as necessary reform.

The Medical and Surgical Society of the District of Columbia has just entered its twenty-first year, and is one of the most progressive and aggressive societies in the City of Washington. Its number is limited, and its roll includes some of the busiest and most active members of the local profession, and its record speaks in the highest terms. Each meeting is closed with an elaborate luncheon.

National Department of Public Health.

During the session of the American Medical Association, at Chicago, 1908, steps were taken looking to the establishment of a Bureau of National Public Health—separate and distinct from the U. S. Public Health and Marine Hospital Service. The proposed department is in no sense to be in opposition to the U. S. Service already existing, but is to co-operate with it in preventing the introduction or propagation of infectious or contagious diseases, etc. The idea, vaguely expressed in the resolutions adopted by the American Medical Association, seems to be to go further than the service already established, and by proper legislation in all the States to secure a better supervision of

all health conditions of the country. While we would not be understood as in any way objecting to the purpose in view—we fail to understand why the same things may not be accomplished by giving the present U. S. Public Health and Marine Hospital Service enlarged powers, and additional help in the way of funds and an enlarged force of competent helpers, to whom remuneration for services rendered should be commensurate with their necessary professional duties. There is no objection to the proposition of the American Medical Association to establish a new department, other than the danger of frictions between it and the U. S. Public Health and Marine Hospital service when the dividing lines are reached as to the Department in authority. If the Congress of the United States establishes such a department, great caution should be exercised in so framing the law as to clearly define the extent of duties of the two, for it does not seem in contemplation by the American Medical Association to do away with the department already in existence—the United States Public Health and Marine Hospital service. Dr. J. N. McCormack, of Bowling Green, Ky., at present Chairman on Organization, has the matter in charge for the American Medical Association.

Economic Value of Sanitation—Typhoid Fever.

Dr. George M. Kober, of Washington, D. C., during the Governors' Conference at the White House last May, presented figures which showed that the decrease in the "vital assets" of the country through typhoid fever in a single year is more than \$350,000,000. Typhoid fever is largely spread by polluted water, so that the death rate from this disease can be directly reduced by the purification of city drinking water. The increased value of the water to the city of Albany, N. Y., where the typhoid fever rate was reduced from 104 in 100,000 to 26, by an efficient filtration plant, amounts to \$475,000 a year, of which \$300,000 may be considered a real increase to the vital assets of the city. The average annual death rate from typhoid in cities with contaminated water supplies, was reduced from 69.4 per 100,000 to 19.8 by the substitution of pure water supplies.

The Medical Society of Virginia

Is now in session at the Jefferson Hotel, this

city, with an unusual large attendance. On Tuesday evening, the following doctors were elected as District Councillors to represent the State at large: Drs. P. A. Irving, Richmond; Stephen Harnsberger, Catlett; M. M. Pearson, Bristol; Kirkland Ruffin, Norfolk, and J. R. Gildersleeve, Tazewell.

Dr. Henry Asbury Christian Elected Dean of Harvard Medical School.

The many friends of Dr. Christian, formerly of Lynchburg, Va., will be glad to hear of the success of this popular young Virginian in the promotion received by his election on October 14th to the position of Dean of Harvard Medical School. Dr. Christian, who is probably 34 or 35 years of age, is a graduate of Randolph Macon College and of Johns Hopkins, as well as of Harvard. He contributed an article to the last volume of this Journal.

The Wise County Medical Society

Met at Wise, Va., October 14th. Several papers were read by members. The State Health Commissioner also was present, and read a short paper relating to public health matters. Dr. J. P. Edmonds is President, and Dr. T. M. Cherry, Secretary.

Principles Concerned in the Diagnosis of Intra-Abdominal Tumors,

The title of an article by Dr. G. Paul LaRogue, of Richmond, begun in the last issue and concluded in this, was, by some twist, erroneously headed "Treatment" when it should have been "Diagnosis," as correctly appears in this issue.

For Sale—Half interest in well-established Sanitarium. Want to sell half interest in my Surgical and Gynecological Sanitarium (established 16 years) to married, capable, surgical doctor, middle aged, and having means to purchase same.

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ANESTHETICS—A SYMPOSIUM.

I.—Physiological Action of Anesthetics.*

By A. B. GREINER, M. D., Rural Retreat, Va.

While anesthesia produced by disease, or injury, is a symptom of great value in the general make-up of pathological cases, yet it is with anesthesia as produced by drugs with which we are chiefly concerned.

Anesthetics are divided into two classes: General and local. Tactile sensibility is due to an intact nervous system, and nerve tissue owes its functioning power largely to its inherent mechanism, but chiefly to proper nutrition. The blood—the great feeder of all human tissues—carries gaseous, as well as solid bodies, for the nourishment of all tissues. On the presence or absence in the blood of the element, oxygen, and therefore its presence, or absence in the tissues, depends entirely the condition of consciousness or unconsciousness—of *æsthesia* or anesthesia. Deprive the body absolutely of oxygen, and it becomes, first, anesthetic, and then dies; supply oxygen in proper quantity and proportion, and the anesthesia gives place to a return of consciousness and tactile sensibility.

While, then, as a general statement, the condition of anesthesia is due to absence or diminished quantity of oxygen in the use of the so-called general anesthetics, yet there are inherent qualities in these agents that lend very materially to the anesthetic state. The vapor of any agent devoid of oxygen would likewise be anesthetic. The vapor of any agent in which there is the element of oxygen in combination,

will be anesthetic, if such combination is so close that the oxygen cannot be separated for use in the economy.

The reason that other vapors than those now in use are not used for anesthetic purposes is because they are more productive of deleterious effects; and also, they may lack anesthetic qualities in themselves. Reliance is, therefore, placed upon those whose after effects are least harmful and most fleeting, and whose anesthetic qualities are greatest in comparison.

Carbonic anhydride is never administered as an anesthetic, although it produces carbonic acid narcosis. In brief, anesthetic vapors are nothing more than substitutes for oxygen for a limited length of time. True, there is in carbonic acid gas the important element, oxygen, but in such close combination, chemically, that it cannot be utilized by the blood current and tissues, and is eliminated through the respiratory tract as the representative of destructive metamorphosis.

Ether, as an anesthetic, is safer and slower than chloroform, because it contains in its chemical combination the element oxygen, which is more or less easily separated from the ethylic radical, and is therefore taken up by the blood and utilized by nerve centers. Such being the case, *ether* anesthesia is greatly preferred, when compared with chloroform anesthesia. Because of this action of oxygen in the composition of ether, it is required that no air containing oxygen be administered while ether is being given, for the anesthetic state would be greatly deferred, and probably not be produced at all. The oxygen in ethyl oxide is sufficient to keep alive the vital spark, and yet not sufficient to interfere with the loss of tactile sensibility. Ether, or some other oxygen-containing agent where the oxygen is in loose chemical combination, should be regarded as the ideal anesthetic. The vapor of chloroform contains no oxygen; hence the necessity of oxygen-contain-

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In the unavoidable absence of the author, at his request this paper was read in full by Dr. J. E. Warinner, of Richmond, R. F. D. 7.

ing air being administered at the same time. The reason for the profound anesthesia produced by chloroform, and the necessity for the simultaneous administration of air-containing oxygen thus becomes clear.

The mucous membrane of the respiratory tract is much more easily and quickly affected by chloroform than the skin. Its vapor inhaled produces the sensation of warmth in the mouth, nose and throat, to which the subject gradually becomes accustomed, and then nothing more than the odor of the drug is perceptible, even though unconsciousness be not yet produced. Because the respiratory tract is unaccustomed to such a vapor, there is at first the feeling of suffocation, or air-hunger. Hence the advisability of permitting the inhalation of a large percentage of air in the beginning of anesthesia, as chloroform has in its composition no available oxygen to satisfy this need of air.

People accustomed to inhaling irritating vapors in their industrial occupations usually can inhale with less discomfort the vapor of anesthetics. Following the feeling of warmth produced by the vapor, there comes by almost insensible gradations the state of relaxation, and finally the complete anesthesia. As the administration of the vapor proceeds, there is a gradual accumulation of carbonic acid gas in the circulation. The carbon is the product of the tissues, and the oxygen coming in contact, produces this gas which should be exhaled. On account of the diminished supply of oxygen, katalysis progresses more slowly, and there is an accumulation of waste products in the body—the presence of which obtunds the nervous system, and produces the anesthetic state. The pulse may be a little stronger and have more than ordinary volume during the first few inhalations; but this condition is soon superseded by a weakened and more rapid pulse. It seems then, that the pneumogastric center is the first to be depressed, and that this inhibition produces the rapidity of the pulse. Just about the same time, the respiratory center shows the same inhibition, and the full, deep inspirations gradually give place to quickened and shallow respirations. With chloroform, there is not noticeable any primary arrest of respiration, as is so frequently seen in the administration of ether. A slight dilatation of the pupils is at first noticed; but during anesthesia they are

contracted, and usually a subsequent dilatation of the pupils while the subject is completely anesthetized is an indication that the vital centers are in danger of being suddenly overwhelmed. The brain cortex is first affected after the primary reflex effects have passed off; then the sensory side of the spinal cord, and then the motor tract of the cord. Fortunately, the centers in the medulla are the last to be overwhelmed—the sensory parts first, and lastly the motor portions, if the anesthesia is too profound. The motor cells in the medulla, through the motor nerves, govern respiration and circulation; and so long as these are not greatly inhibited, there is no danger of dissolution. Bear in mind that almost the first effect noticed in the administration of chloroform is one traceable to an inhibiting influence on the circulatory and respiratory centers in the medulla; and it appears that these two nerve centers are influenced reflexly at the very first, and are the very last to be overcome. When inhaled, chloroform seems to produce no effect on nerve trunks.

The center in the medulla which is chiefly affected by the vapor is the vaso-motor; and to the inhibiting influences on this center are due most frequently the fatalities from anesthesia. Any drug that depresses or inhibits a nerve center causes that center to lose control over its functions. The vaso-motor center, functioning as it should, gives tone to the blood vessels, and causes them to contract properly on the volume of blood within. Remove such control by depression or inhibition of the nerve center which presides, and the vessels dilate from lack of tonicity and from the pressure within.

The natural consequence is that all the blood accumulates in the great *venous* channels, and the heart has nothing with which to perform its function. Keep in mind that the veins can easily contain all the blood in the human body. The failure of the heart is, then, secondary to failure of the vaso-motor center; and the quickened, weak pulse is not due to direct depression of the heart. The respiratory center, not being properly supplied with arterial blood, next fails to perform its function, and as a consequence failure of respiration is a secondary manifestation. It therefore appears conclusively that chloroform narcosis death is due

neither to cardiac nor respiratory failure primarily, but to a *vaso-motor failure*.

It has been observed that even after respiration has ceased, the heart has been found yet beating, due—in part at least—to the dependent position of the heart and its continued blood supply through the coronary vessels. Whilst it is altogether proper to watch the working of the heart during anesthesia—as the lack of tone about the vessels can thus be readily detected, indicating vaso-motor inhibition—yet the respiratory function should receive special attention. So long as respiration is properly performed, the heart—if no organic disease exists—may be left to take care of itself.

Atropine is the most powerful of all vaso-motor stimulants, and its routine use, unless there be some contraindication, would seem to very effectually guard against disaster.

These remarks have been confined to the physiological action of chloroform, because in more general use, and because its action and that of ether are very similar, with the exception that ether is not so depressant to the vital centers, and is therefore safer. But we should not forget that during deep anesthesia there is just as great danger of paralysis of vital centers from ether as there is from chloroform.

II.—Administration of Anesthetics in Medicine and Obstetrics.*

By H. S. BELT, M. D., South Boston, Va.

Anesthetics are agents which cause temporary abolition of sensation—local or general. General anesthetics are far more important, and are usually administered by inhalation, and by their influence upon the nervous system abolish sensation, produce complete muscular relaxation, and finally cause entire suspension of sensation and power of motion, together with loss of consciousness, and all manifestations of life, except respiration and circulation.

As far back as 1799, Sir Humphrey Davy noticed that something more than exhilaration could be produced by the inhalation of nitrous oxide gas—a degree of insensibility to pain; but he did not carry his investigations far enough to see that laughing gas could be made available as an anesthetic. That discovery was

reserved for Horace Wells, a dentist of Hartford, Conn., who, in 1844, began its use for extracting teeth, and tried to demonstrate its use as a general anesthetic in an operating theater in Boston. Unfortunately, there was some fault in preparation or administration of the agent, and it dropped into disrepute; whereupon, the Doctor committed suicide on account of his failure. Some twenty years later, however, it was revived, and from time to time has been used with reasonable satisfaction—mainly by dentists—though of late years, it has come more and more into use as a general anesthetic, being administered in combination with pure oxygen gas.

“In 1846, another dentist, who afterwards was a physician, William T. G. Morton, of Boston, succeeded in showing in the Massachusetts General Hospital, that the inhalation of the vapor of sulphuric ether would produce entire insensibility to pain.” It is, however, well established that Dr. Crawford W. Long,—then of Jefferson, Ga., but afterwards of Athens, Ga.,—used ether as an anesthetic in surgery as early as 1842—four years prior to Morton’s demonstrations—although to Morton was given the honor.

Chloroform was discovered independently by Guthrie, of America, and Soubeirain, of France, in 1831; but it was not until about 1845 or 1847 that it was used in medicine. Dr. (afterwards Sir) James Y. Simpson, of Edinburgh, first used it in obstetrics. Having the advantage of being more speedy in action and more agreeable to the patient, it soon came into common use to the exclusion of other anesthetics, though throughout Northern United States, ether is yet more extensively used.

Many surgeons use the combination of alcohol, chloroform and ether—known as the A. C. E. mixture. At one time, I used it extensively, but gradually gave it up, as I liked chloroform alone better. To a great extent, the use of the different agents is simply a matter of election. The general consensus of opinion, however, combining the North and the South, is that ether is more extensively used. It is certainly less dangerous in cold climates. My own preference is for chloroform, simply because I have become accustomed to it, and have never had a fatality from it.

The most important things in connection

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with its use is the preparation of the patient, and the way in which it is administered. When available, a skilled anesthetist should always administer the anesthetic—whether for diagnostic, obstetrical or surgical purposes. In every community, there should be one who has no interest in the case other than the proper administration of the anesthetic. Such an one should be encouraged by proper remuneration, and doctors should see to it that his fees are paid. His services very greatly facilitate speedy work, which is important, and often means the difference between life and death. Chloroform should be given cautiously and slowly, drop by drop, with the patient's lower jaw elevated all the while, so as to prevent the tongue dropping back and cutting off respiration. I always provide myself with a tank of oxygen, some amyl nitrite and adrenalin chloride in case of accident or danger.

When practicable, give the patient a reasonable cathartic the night before the use of the anesthetic, which latter should be given when the stomach is empty. If possible, I always give (unless contraindicated by age—whether too old or too young—or by some grave form of kidney trouble) one of Abbott's Hyoscine, Morphin and Cactin combination tablets, hypodermically an hour and a half before the anesthetic is begun. This, I believe, greatly lessens the danger of shock and takes away to a great extent the fear of the anesthetic, and for the most part the fear of the operation. It also very greatly lessens the nausea, and requires about one-fourth the amount of chloroform.

The uses of chloroform in medicine are numerous, and are hard to define. In diagnostic work, especially in pelvic examinations of young girls, it is useful—first to make a thorough examination and a correct diagnosis, and, secondly, to save her feelings in having to undergo a conscious examination. Here, I would add, it is important never to administer an anesthetic to a female except in the presence of a third person, for some doctors have gotten themselves in trouble by accusations along this line.

Chloroform is also used in liniments and for immediate vesications over small areas. Ten or fifteen drops on the skin confined under a

watch crystal will, in a very short time, produce burning and blistering.

Internally, I have found but little use for it except in extreme cases of nephritic or biliary colic, when morphine hypodermically will be found as effectual and more convenient.

I have employed it internally, in combination with croton oil for the removal of tapeworms, but other agents are more effectual. For instance, powdered kamala, given in two dram doses, on an empty stomach, repeated in half quantity in two hours, if necessary, will invariably prove effectual in eliminating the heads of tape-worms.

In cases of extensive burns—especially in children—the patient should be thoroughly anesthetized, so as to cleanse the surface as thoroughly as for a surgical operation, before applying the antiseptic dressing, which should consist of sterile gauze, thoroughly soaked, after applying, with a solution of carbolic acid and glycerine—one dram of the acid to six or eight ounces of boiled glycerine—subsequently covered with antiphlogistin to exclude the air. After such dressings, I have known children not to awake until their usual waking hour, when they would then suffer practically no pain. After two or three such dressings at intervals of several days, the patient is usually practically well without material disfigurement. The dressing must be kept constantly wet with the glycerine mixture to prevent sticking and pus formation.

In obstetrics, for sixteen years, I have invariably used chloroform—exceeding seventy-five cases a year, and I have yet to regret its use in a single case. I do not believe the ordinary use of chloroform predisposes to hemorrhage, for the only cases of hemorrhage I have ever seen die were those following rapid labors before I reached the patients. In cases in labor for hours before I arrived, who were rolling over the bed like worms in embers, with rigid os and perineum, practically exhausted, the systematic use of chloroform with each pain, they would quiet down, the parts would soften, and labor be terminated satisfactorily in a short time. In obstinate cases, after a few hours' suffering, without much dilatation, a hypodermic of three-eighths of a grain of morphine and one one-hundred and fiftieth grain of atropine, usually stops the pain, and gives the

patient some hours of sleep and rest. During this rest, the circular muscular uterine fibers relax and become dilatable, and the patient on awakening is stronger and in better condition for the final pains.

In all cases of instrumental interference or versions, or other artificial delivery, chloroform greatly lessens the danger of lacerations, etc. I do not approve of the use of the H. M. C. tablets, previously referred to, in obstetrics.

Chloroform is indispensable in puerperal eclampsia and in strychnia poisoning. In the convulsions of children, it is a *sine qua non*.

What has been said of the uses of chloroform is practically true of ether. As it is very inflammable, it requires very great care in handling in rooms with burning lamps or open fires. Its chief place is an anesthetic in surgery and obstetrics. In medicine, I have used it as a heart stimulant and as an antispasmodic, and some forms of neuroses—employing it in the form of the compound tincture (Hoffman's anodyne) in dram doses.

The administration of ether as a general anesthetic should be by the open drop method. The old way of smothering a patient seems inhuman.

What has been said of chloroform as to its practical uses is likewise true of ether. In cases of chronic nephritis or bronchial trouble, chloroform is safer of the two. In cases of heart trouble, such as valvular lesions and atheromatous conditions, ether is the safer.

The late Dr. Julian J. Chisholm, of Baltimore, used chloroform exclusively without a single fatality. He said that patients with no heart trouble took it well, and those with heart trouble took it better.

III.—Administration of Anesthetics in Surgery.*

By REID WHITE, M. D., Lexington, Va.

It having been decided that an anesthetic is necessary for the determination of the nature of, or the correction of a trouble, we are confronted with the question as to which is best: a local or a general anesthetic? Our part relates to general anesthesia.

Of first importance is the selection of the

anesthetist. He should have a wholesome respect for anesthetics, and at the same time be fearless in handling them. He should be experienced, cautious, always most attentive and watchful; and profoundly impressed with the responsibility of his position—that is, on a par with that of the operator. He should be quick to detect the signs of danger, and prepared to deal with the troubles which may occur.

As to the agents, nitrous oxid, ether, chloroform, bromid of ethyl, ethyl chlorid, constitute about the list from which to select. We will here consider only nitrous oxid, ether and chloroform.

The patient's condition and character of operation should guide us in selecting statistics as to relative safety may be stated as follows:

Chloroform, one death in 1,500 anesthetics to one in 3,200.

Ether, one death in 2,800 anesthetics to one in 2,300.

Gas and ether, one death in 1,300 anesthetics.

With gas simply as introductory to ether, thereby shortening the time, and greatly reducing the amount of ether used, there will probably be still greater improvement in the showing of ether.

Arranged in the order of safety, I should say:

1. Nitrous oxid, first, (being used only for momentary anesthesia).
2. Ether preceded by nitrous oxid.
3. Ether alone.
4. Chloroform.
5. The A. C. E. mixture, between ether and chloroform.

As to the patient consider:

1. *Age*.—The very young are *supposed* to take chloroform particularly well; but the *Lancet* investigations of 406 chloroform deaths showed that fifty-eight were under fifteen years of age. If ether is given to the very young, it must be given greatly diluted with air on account of the sensitive respiratory mucous membrane. For old people, chloroform is preferable because of their tendency to bronchial troubles and arterial degenerations.

2. *As to conditions*, in fleshy subjects, chloroform is safer owing to their tendency to bronchial troubles. Where good compensation for

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valvular heart defects exists, there is no choice. In failing compensation, with cough, dyspnea, cyanosis, effusions, etc., chloroform with oxygen, or probably better still, ether preceded by gas is preferable, as tendency to struggle is reduced to a minimum under gas. The A. C. E. mixture has been suggested as a compromise. This mixture might also let us down easy in cardiac, muscular degenerative changes. Where atheromatous vessels exist, use chloroform, as there is less danger of cerebral hemorrhage under this agent. Acute and chronic lung inflammations strongly contraindicate ether; and so where there is a tendency to pulmonary hemorrhage. In acute nephritis, and generally in chronic nephritis, avoid ether. Exhausted and greatly debilitated patients and anemics do better under ether. Chloroform is the anesthetic for dyspneics, resulting from pressure (as abdominal and pleuritic effusions, tumors, etc.)

3. *Character of operation.* Chloroform must never be given a patient in the sitting posture, as has been done in the dental chair, for nose and throat operations, etc. In brain operations, chloroform is best, as it causes less congestion of this organ than ether. Less movement of abdominal muscles, resulting from quieter breathing under chloroform has recommended this agent for abdominal work. However, the careful, even administration of ether overcomes this objection. Operations attended with marked shock do better under ether—such as operations for bowel obstruction, or the optic nerve, kidneys, etc.

4. *As to Climate.* If you live North or West, use ether, as public sentiment will not tolerate chloroform except in the most carefully selected cases. Warm climates are favorable to the use of chloroform. In England and on the European Continent chloroform is used, though Germany is coming to the use of ether. Neither drug can be tampered with.

Preparation of patient calls for a good look into his general condition—especially as to the kidneys, the circulatory system and lungs. Begin this investigation several days in advance of operation, and keep the patient on a light, nourishing diet—preferably liquids and semi-solids. During the day preceding anesthesia, use non-coagulable liquid diet, such as beef juice, clear soups, etc. Move the bowels with mild laxatives and enemata. Drastics

depress the patient. Give no food for from four to six hours before the operation, except in the very old and debilitated. Here we may give light liquids (but no milk) sparingly. If nourishment and alcohol are necessary within three hours of operation, give them per rectum. Gastric lavage is sometimes advisable to relieve a full stomach when immediate operation is necessary, to lessen the tendency to aspiration troubles, as in stercoraceous vomiting in cases of intestinal obstruction. Morphine hypodermically insures better behavior of nervous, excitable subjects in the first stages of anesthesia; but it probably increases the nausea following. Remove constricting bands from waist and neck, false teeth, chewing gum, etc.

As to the administration of the anesthetic, we will first consider *chloroform*. So far, devices for this purpose have worked wonders in the hands of inventors, and have in the hands of others. So we must rely on the time-honored napkin, or handkerchief, the Esmarch, or Schwimelbusch mask, or the Junker inhaler—the latter only valuable in operations about the nose and throat, as with its tube attachment, the drug may be conducted into the nose or throat without interfering with the operator.

The anesthetist should have at hand a mask or inhaler, a dropping bottle, a mouth gag, and tongue forceps (the latter, very seldom needed), a hypodermic syringe, solutions of strychnia, atropine and brandy; small swabs and holder, and an electric battery. A nurse, or at least, a third party should be present, and an assistant in every case.

The patient now on the table should be requested to assume a comfortable position. No pillow, or, only a small one, under the head, and well under the shoulders should be allowed. Turn the face slightly to the side. Talk encouragingly to the patient and describe the sensation of falling, hearing of noises, etc., experienced by patients going under anesthetics. Keep the room ordinarily quiet, as patients are often greatly alarmed by loud or unusual noises in the first stages of anesthesia. Whispering and tipping about the room are also disturbing.

See to it that the chloroform is fresh, and prepared by a trustworthy chemist. Cover the patient's face lightly with vaseline. Place a

towel over the eyes and mouth to prevent burning by the chloroform.

The mask, held several inches from the face, should receive a few drops of chloroform at short intervals, or it may be applied drop by drop. The patient being told to breathe regularly and a little deeper than usual, the mask may be brought nearer and nearer to the face as the patient becomes accustomed to the odor. Giving the chloroform gradually insures against violent struggling of the patient. During the stage of excitement, keep up the inhalations unless breathing becomes labored, when the chloroform should be withheld for a moment. If the patient holds his breath do not push chloroform, as presently there will come one or a succession of very deep breaths which may give an overdose. If vomiting occurs, stop the chloroform, turn the face to the side, and wait for restoration of quiet, when inhalations may again be begun. From the start, keep a finger on the facial, or temporal artery, and an eye on the chest, and from time to time on the pupil, watching all the time the color of the face. Continue adding chloroform to the mask until patient loses consciousness and quiet sets in. Signs of relaxation, now present, should be slow, regular respiration, contracted pupils, loss of conjunctival reflex, loss of resistance and reflexes.

Patient is now ready for operator; chloroform must be reduced to the minimum amount necessary to maintain relaxation and insensibility. If stertor begins, reduce or stop the chloroform for a moment. If breathing becomes noisy and obstructed, see if the tongue has fallen back. If so, pull the lower jaw forward, or resort to the tongue forceps.

If sudden pallor develops, breathing becomes shallower, or stops suddenly, or if the pulse becomes disturbed and stops, or the pupils become dilated and fixed, discontinue the chloroform, and at once institute means for resuscitation. The operator suspends work and protects the wound. An assistant gets on the table and, grasping the patient under the knees, elevates the lower portion of the body to an angle of forty-five degrees. Artificial respiration by the Sylvester method is resorted to. Stimulants are to be given hypodermically. Ether poured from a considerable height on the epigastrium sometimes excites respiratory effort.

On return of color, pulse and regular respiration, the patient may be lowered to the table, and after he has been brought cautiously again under the anesthetic, the operation may be resumed.

In cases showing gradual weakening of the pulse, ether as a substitute for chloroform sometimes proves beneficial.

In cases of shock and profuse hemorrhage, very little chloroform should be given.

In forgetful breathers, stop chloroform, and make traction on the tongue.

The patient should be closely watched until entirely from under the influence of the drug.

Ether. In a general way, ether administration is about the same as for chloroform, so far as "the open method" is concerned. The "close method" calls for a complicated equipment which requires for its manipulation unusual skill, such as is possessed only by the inventor, and which we will not consider.

In "the open method," we may use either a cone made of cardboard, covered with a towel, or the Allis inhaler.

Preparation of the patient is practically the same as for chloroform.

The Allis inhaler is placed over the face dry, and the patient is told to take two or three breaths through it, and to breathe regularly and naturally. Now pour a few drops of ether into the inhaler. Add small quantities at short intervals, encouraging the patient to breathe regularly, and not too rapidly. If strangling and coughing occur, remove the inhaler and allow two or three breaths of air. Begin inhalations again cautiously. Increase the quantity carefully as the patient becomes accustomed to the fumes, which are very irritating. As consciousness is lost, there is frequently a tendency to vomit, which tendency is, as a rule, readily overcome by "pushing the anesthetic." In this matter ether differs from chloroform. The short period of unconsciousness and insensibility from ether, lasting a minute or two, is known as the period of primary anesthesia. During this stage, operations of short duration, such as opening an abscess or dilating the sphincter, may be done. Here we find another difference in effect from chloroform; but never operate under chloroform unless the patient is completely under its influence.

Following the stage of primary anesthesia,

there comes the stage of excitement, which lasts some five or ten minutes. During this stage, the anesthetic should be given regularly, as before. Keep the eye and the ear on the respiration. Now, the stage of complete anesthesia comes on, when the amount of ether should be cut down to the minimum. This is particularly important, as ether does great harm as an irritant of the respiratory outfit and of the kidneys. The more of it inhaled, the more damage done.

We look for cyanosis with great dread in giving chloroform; not so when giving ether.

The period of unconsciousness following ether narcosis lasts from half an hour to several hours, during which time the patient should be closely watched. Turn the patient on his side, or at least the head to one side, if vomiting comes on, so that the vomited matter may pass readily from the mouth, thus reducing the danger of inspiration troubles.

Guard the patient against exposure by applying heat, remembering, however, that in this condition of benumbed sensibility the surface may be badly burned.

Liquids may be allowed in a few hours after ether, according to the desire of the patient. Hot water per rectum greatly satisfies thirst.

Nitrous oxid has been used for years as an anesthetic. When combined with oxygen, it produces anesthesia without cyanosis. It is especially advised as the anesthetic for nephritic patients. Its principal use in surgery is as an introductory anesthetic for ether.

The gas comes stored in steel tubes in which it is liquefied. From a stop cock tube, it passes to a rubber bag, where it is vaporized, from which it is given to the patient.

In administering this gas, place a piece of wood or cork between the teeth, with a safety string attached. Insert the mouthpiece. Close the nostrils with the thumb and fingers. Cyanosis shows itself when the lungs become filled with the gas. Unconsciousness begins to show itself in a few seconds.

Signs of asphyxia soon become evident—rapid pulse, stertorous breathing, dilatation of pupils and cyanosis. This condition may be looked for within a minute.

In giving this gas, watch the pulse carefully. Any sign of failure should be taken as a dan-

ger signal, and the gas immediately discontinued.

In using gas and ether, the gas is given in small quantities, and the ether gradually added. Complete anesthesia is very quickly and very pleasantly accomplished in this way. When once under the influence, anesthesia is continued with ether.

With our present light, this latter combination appears to be the ideal anesthetic in cases not showing any special contraindication to ether.

IV.—Indications for and Selection of Local Anesthetics.*

By LOMAX GWATHMEY, M. D., Norfolk, Va.

On looking over the voluminous literature on the subject, one is impressed with the remarkable disparity in the number of patients operated on with local anesthesia in foreign clinics, and in the United States. While such method is constantly becoming more popular in this country, its growth is scarcely perceptible compared with the rapid increase abroad, where in some clinics local and spinal analgesia have almost supplanted the general methods of chloroform and ether, stovaine spinal anesthesia being in the ascendancy.

The reasons for this disparity are possibly to be found in our national characteristics, whereby we seek perfection, but by rapid strides. Chloroform and ether prove satisfactory up to a certain point, but much mental reservation in regard to their use is evidenced by the development of professional anesthetists who are safer and more adept in their use. Under local anesthesia, we must expend more time in operating, and more care and delicacy in our handling the tissues. In large clinics this is the chief bar to their use. The same objection does not hold good in the matter of spinal analgesia, and with a more thorough understanding, this method will be much further employed. There are, in many instances, very decided drawbacks to the use of ether and chloroform; patients' lives and comfort are constantly jeopardized in barbarous fashion, being often subjected to the tender mercies of untrained, short-termed internes.

The mortality rate from anesthetics is no-

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toriously incorrect, is much higher than the tables given, and is misleading. When we consider the delayed convalescence from disturbed digestion, the many inconveniences and sequences of chloroform and ether, the pain of the shock, of vomiting or coughing, it would seem we are falling short of our duty when we fail to provide a professionally trained anesthetist, or seek some other method under which to operate. In the whole domain of surgery, there are practically no operations which cannot be done under local and spinal analgesia, many of which are better done, and others yet wherein a general anesthetic is positively contraindicated.

In using local anesthesia it is essential in the initial stages of the procedure to go slowly, and avoid the pain which can be caused by the instillation of the agent, to await the development of complete analgesia, and to avoid rough handling of tissues, blunt dissections or undue tractions on sensitive parts. A thorough study of the nerves, sensitizing the operative field, and a knowledge of those tissues which are highly sensitive, and those which are but slightly so, is of vital importance. Of the many agents which have been and are being used, our selection of one can be well guided by the rules laid down by Braun.

1. *Toxicity.*—The poisonous dose must be known and not approached or exceeded. There are few of the known agents relatively less toxic than cocain, because of their less relative analgesic power. This does not hold in spinal analgesia.

2. *Irritating qualities.*—Must not impair healing, be neither acid nor alkaline.

3. *Sterility, Solubility and Durability.*—Cocain has heretofore been objectionable because of its difficult sterilization.

4. Must permit of combination with adrenalin.

Starting with these qualities, we must next procure an isotonic solution which, when injected warm, will cause neither shrinking nor swelling of cells and little or no pain or irritation.

Strong solutions are only permissible as topical applications, and then should be guarded by adrenalin; hypodermically they are strongly contraindicated for the double reason of local irritation and toxic effect, it being demon-

strated that a given amount of cocain in five per cent. solution is five times as toxic as the same amount in a one and five-tenths solution (Reclus).

The indications for local and spinal analgesia can be discussed at great length; broadly speaking, they are indicated where general anesthetic is contraindicated, and where an operation can be as well done with a local anesthetic, the patient not objecting. Local anesthetics have been largely delegated to minor surgery in this country, and find frequently an inappropriate and absurd use in inflamed tissues, which are only properly handled under general anesthesia; whereas, for example, a crushing injury of the lower extremities with great shock in which the nerves should be blocked, a general anesthetic is commonly used (increasing, not decreasing the shock), simply because it is a major operation.

The more specific indications are those cases of general diseases; such as profound anemia, where the hemolytic action of chloroform and ether is well known; in diabetes, which is commonly accentuated by general anesthesia, and even precipitated into dangerous coma; hyperthyroidism uncontrolled by the usual methods sufficient to warrant the use of general anesthesia, where perhaps only a little attempt at control, such as the ligature of one thyroid artery at a time. Kocher is the great advocate of local agents in thyroid cases, and his statistics bear out his statements.

In cases of poor resistance, where the organism is staggering under the onslaught of an overpowering invasion of toxins, and has developed just sufficient resistance to be wavering in the balance, the added depression of a general anesthetic often turns the tide, and the patient is overwhelmed. Such cases are exemplified by emphysema, stercoraceous vomiting, diffuse peritonitis and strangulated hernia of forty-eight hours' duration or more.

In laryngeal obstruction where the paralysis of the auxilliary muscles of respiration under general anesthesia would be sufficient to cause asphyxiation.

In profound shock where the nerves can be easily approached and blocked by peri- and inter-neural injection; even in anesthesia of a general nature, where traction on, or irritation of, nerves produces great shock, it has been

pointed out, by Crile, that cocainization will relieve this, as in the dangerous superior laryngeals, in larynectomy, etc. This nerve blocking action is of inestimable value, and in it local anesthesia finds one of its most indispensable and valuable uses.

In diseases of the lungs, such as tuberculosis, pleurisy, pyo- and pneumo-thorax, asthma, embolic, broncho- and lobar-pneumonia, etc.; of the heart, as myocarditis and pericarditis and effusion; of the kidneys, as acute parenchymatous nephritis; of the liver, as large abscesses on the verge of the interpleural, or interbronchial rupture; in the cirrhosis of drunkards, who have wet brains; of the intestines, as obstruction of long standing with fecal vomit, where simple enterostomy or colostomy is indicated, and in strangulated hernia of long duration; of the central nervous system; where irritation or inflammation exists, as in meningitis of all types.

The contraindications are: in inflamed tissues, directly; in children too young to understand the circumstances; in neurotic and hysterical subjects incapable of self-control, and prone to exaggerate the simplest actions; in very fat subjects for local infiltration, though not for spinal anesthesia.

As elective fields for local infiltration: The eye, nose, pharynx and larynx, but not the ear or mastoid, which are better left to gas and ether, respectively. All comparatively superficial fields where the supplying nerves are easily reached particularly the genito-urinary region, as circumcision, hydrocele, varicocele, hernia, etc. The digital extremities, whose four supplying nerves can be easily blocked at the base of the part. The scalp lends itself especially happily to this method, for any area can be easily rendered analgesic from the periphery, and wounds can be properly cleaned up and explored, and sebaceous and other tumors removed.

DRUGS—PREPARATION AND STRENGTH.

Of the many drugs prepared, we will consider those for topical application: Cocain, alypine, tropacocain. For infiltration: Cocain, betae eucain. For spinal analgesia: Cocain, stovain, novocain.

Of these, cocain and tropacocain are alkaloids from different varieties of the cocoa plant, and are used in the salt, hydrochloride. The

others are synthetic productions, and can be boiled; they are less toxic, less active, and combine partly with adrenalin.

Cocain used as the soluble hydrochloride first obtained in 1860, and used as a local anesthetic since 1884, when it was introduced by Koller, of Vienna, is the best topical and infiltration analgesic when properly used. It can be sterilized by fractional dry heat.

(1) at eighty C. one hour for three days.

(2) Twenty minutes in autoclave at 115-120 C.

(3) Boiled once slightly.—*Riley*.

Dry heat 230 F. for ten minutes amounts weighed, put in tubes and again sterilized (dry) 290-302 F. ten to sixty minutes (*Kocher*) boils and uses warm. Tablets and preparations of the pharmacists with adrenalin and sodium chloride. The toxic dose in strong solutions and weak subjects is one-fourth grain. In weak solutions, guarded by adrenalin, and in strong subjects up to one grain. The toxic symptoms are weakness and tremor, headache, vertigo, pallor, moist skin, feeble rapid pulse, slow, shallow respiration, nausea, vomiting and unconsciousness. The treatment is to lower the head and use ammonia, whiskey or brandy by mouth, and camphorated oil or ether, with cardiac stimulants by hypodermic.

Topically guarded by adrenalin, the crystals may be used on small areas, or as strong as a ten per cent. solution. In the urethra a one per cent. solution is sufficiently strong, if given the proper time. In infiltration, never beyond a one per cent. need be used, and preferably two-tenths per cent., (or 1-500) for skin and peri- or inter-neurol injections, and one-tenth per cent. (1-100) for subcutaneous tissues, muscles, etc.

The osmotic tension is of great importance. An isotonic solution should be about nine-tenths sodium chloride—below fifty-five one-hundredths, or over two and five-tenths causes pain, and lowers the vitality. The solutions are best used warm.

Braun's solutions are here given as very useful:

1-100 (a) Cocain Hyd. .1 gm. (gr. 1.5). Physiological Salt 9-10, 100 c.c. Solution Adrenalin, 1-100 5 gtt.

1-100 (b) Cocain Hyd. .05 gm. (gr. 0.75).-

Physiological Salt 5 c. c., solution adrenalin 10 gtt.

Alypine is neutral in reaction, and does not cause ischæmia, but a slight hyperemia, and is not irritating. It is but faintly toxic, and has a rapid and excellent anesthetic power, said to be nearly equal to that of cocain. It is a most excellent drug for topical application in eye, nose and throat work.

Propococain possesses no advantages over cocain except that it can be boiled. It is less active and less toxic, but will not combine with adrenalin.

Eucain.—A synthetic product soluble to 4 per cent. but easily decomposed by alkali in even, minute amounts. Has the same freezing point as blood, 0.56, and same osmotic tension. Markedly hæmolyptic and may irritate or cause necrosis in strong solution without salt. Less toxic and much slower in action than cocain and can be boiled. Barker has used as much as 200 c. c. of a 1-500 solution. As much as six grains has been given.

Barker's formula is: Eucain, 0.2 gm.—gr. 3; Na. Cl. 0.8 gm.—gr. 12. 1-500 solution: Aq. Dist., 100 c. c.— $\bar{3}3\frac{1}{2}$; Adrenalin, 1-1000, 10gtt. equals 0.5c. c. (Adrenalin, 1-200,000.)

Stovain and novocain, synthetic products, are best for spinal analgesia. They can be boiled and combine fairly well with adrenalin. They are but faintly toxic.

Eucain, nirvanin, orthoform, aneson, akon, holocain, magnesium sulphate, etc., have all been mentioned and advocated, but the above drugs seem about the best in their different places.

Morphia gr. 1-8 to 1-4 with or without hyoscin gr. 1-100 or scopolamin gr. 1-100 should precede operation by half-hour to an hour. The patient should not be fasting, but have taken a raw egg and cup of black coffee or a glass of wine or milk.

Technique.—Topically in inflamed areas blocked beyond inflammation in course of nerves by hypodermic injection and ligature. Luke recommends this formula: Sol. Ac. Carbol, 10 per cent. $\frac{1}{2}$ -oz.; Sol. Coc. Hyd., 10 per cent., $\frac{1}{2}$ -oz.; Glycerine, 2 drs.; Dist. Water, q. s., 2 oz.

Immersion in the solution for ten or fifteen minutes with the addition of carbolic crystals to carbuncle openings, etc., will do much to

allay pain. We prefer peripheral blocking where practical or better the administration of nitrous oxide gas. On mucous membranes, such as the nose and pharynx (exception is noted in the care of the larynx), where absorption is rapid, cocain in strong solution should be applied only with adrenalin.

For infiltration of the skin all hypodermics should be of glass and be boiled, the solution freshly prepared and warm. The initial skin infiltration begun with care and as each wheal is formed in the deep layer of the skin, the needle should only progress after an area is analgesic. In this way only the initial prick is felt. The solution is now changed from 1-500 to 1-1000 if the area is extensive, and the subcutaneous tissue, fascia, muscles and peritoneum or periosteum successively infiltrated, a long needle being used for the deep tissues. The known nerve courses should be blocked by pushing the needle in their direction beyond the immediate field of operation. The sensitive tissues must be borne in mind; as skin sheaths and connective tissue bundles, synovial sacs, periosteum and peritoneum, the blood vessels and the usual structures along which nerves run. The insensitive ones are such as subcutaneous tissue, muscle, bone and cartilage.

Structures with spinal nerve supply are mostly sensitive and those with sympathetic but faintly so. A sufficient time should now elapse without disturbing the tissues for the full analgesic effect of the agent. This is from five to fifteen minutes with cocain and from fifteen to thirty with B. Eucain. The œdema likewise subsides. The adrenalin prolongs the anesthetic period to from one to three hours, and the tissues liberate the agent so slowly that it is destroyed without toxic effect.

The healing after local analgesia has seemed to be rather better, if anything, than under other methods; the necessarily gentle handling of structures and the clean, sharp dissections may account for this, however. The danger of secondary hemorrhage from the minute quantity of adrenalin is too remote to be seriously considered. Where much infiltration has been done, it is wise to insert a few strands of silkworm gut through the skin for serum drainage.

Spinal analgesia in its later development seems remarkably safe and efficient, and the study of the evil effects diminishes when we consider the number of operations and the variety of drugs used. In a tabulation of 5,532 cases of stovain analgesia by Torrance, of Birmingham, the fatalities are less than would have occurred in the same class of cases under other methods.

Küster states that there have been no cord degenerations after eight years of use of all kinds of drugs in many hands.

The immediate evil effects are headache, vomiting, weakness and anorexia lasting for days. Occasionally there are chills and rise of temperature, occasioned, doubtless, by mild meningitis. Küster states that with improved technique his last three hundred cases have been without any unpleasant symptoms. He uses novocain. In the first two hundred, 14 per cent. had headache, which was relieved by withdrawing 10 c. c. of spinal fluid or a dose of pyramidon. His present technique withdraws 15 c. c. initially and only introduces 2-3 c. c. of novocain solution. This has obviated headaches.

His formula is: Novocain, 0.15 gm.; supraruim Borici 11000, 5 qts. equals .000325; Aquæ, ad 3 c. c.

He used 2 c. c. for low and 3 c. c. for high operations, elevating the hips as needed.

Mitchel, in Bryant's or Buck's surgery, gives the doses of cocain: (1) lower extremities, 15 mgm.; (2) to sternum, 20 mgm.; (3) upper extremities, 50 mgm. Brown's Tablets—Cocain, 10 mgm.; supraruim, 1-10 mgm.; salt, 90 mgm.; Beta Eucaïn, 15-35 mgm.; tropococain, 30-40 mgm.; stovain, 40-70 mgm.

The technique is simple. The patient is prepared as usual, but not fasting, a glass of milk, wine or cup of coffee being taken, and a hypodermic of morphia gr. 1-8 to 1-4 given one-half hour preceding. The best position is patient sitting with shoulders bent forward; if unable to sit, the lateral bent position can be used, but must be changed to get uniform analgesia. After scrubbing and making sterile, a small nick in the skin will enable the needle to enter with less pressure. A point one-half-inch to one side of center and just above line between iliac crests is selected. After the needle is introduced from one to three inches, depending on the subject, the wire in needle should be

withdrawn just before the dura is reached and the flow of spinal fluid marks the termination of the puncture. After the withdrawal of the amount of fluid decided on it can be used as a diluent of the agent if desired, though there seems but little to be gained if we are using the isotonic solution. The syringe is attached and the agent introduced. The patient should continue sitting a minute or two and should then lie down. Should high anesthesia be desired the hips are elevated. The operative field is now prepared and with this completed the analgesia is usually complete. All forms of operations are done with this method from breast amputation all through the abdomen and to the lower extremities. Ryall prefers the method in prostatectomy of old men, and all claim much less shock by the nerve blocking in all types of operations.

DISCUSSION.

Dr. Virginius Harrison, of Richmond, in referring to the medico-legal side of the subject, said there are certain psychical conditions produced when administering an anesthetic to a female patient, which at times are converted in imagination to the sexual act, and it is important that no doctor should administer an anesthetic to a female when alone with the patient. The genital sensation is about the last to be lost; the mind cannot control itself, converts the effect of the anesthetic into the physical act, and you cannot disarm the patient's mind that some liberty has not been taken. Ninety per cent. of these cases occur in the dentist's chair.

Accounts of patients being anesthetized for purpose of robbery by squirting chloroform through a key-hole are out of the question. Where one person is in bed asleep, it is possible to administer chloroform effectively without arousing the sleeper, but it requires an expert to do it, and therefore such reports are improbable. The same thing holds good in regard to rape.

In regard to obstetrics, there was great opposition to giving it in labor until Queen Victoria took it in 1857 at the birth of Prince Leopold. Then public opposition ceased. As a rule, it is unnecessary to give chloroform until the second stage comes on and the head pushes down against the perineum. Then chlor-

of form aids in relaxing the perineum, relieves the suffering, and often prevents extensive laceration in precipitate labor by allowing the head to come more slowly.

Dr. Charles S. Webb, of Bowling Green, said that sometime ago while preparing a paper on the use of anesthetics during labor he sent a personal letter to professors of obstetrics in a number of the principal colleges of the United States, and in every case, in reply to a question as to the effect of chloroform on the progress of labor, the answer was that it would almost surely lessen the force of contractions, and in many cases stop labor altogether. This, too, had been his experience.

If the pains of labor are coupled with powerful contractions, you may give chloroform to complete anesthesia, but if the pain is not coupled with strong contractions, you will often stop labor, so that the woman has to start all over again, with nothing gained.

Dr. H. D. Howe, of Hampton, had heard no mention made of the use of chloride of ethyl. Except for its excellent mental effect, he believed that cold used locally was practically useless. In fact, the pain which comes with the return of the part to its normal state is greater than that from opening an abscess, or some other minor work.

For the infiltration method of local anesthesia, probably the best agent is one-tenth per cent. cocaine in combination with normal salt solution and a small amount of adrenalin.

The method of administration is important. If it is given into the skin so that each successive prick of the needle raises the characteristic wheal, the patient will certainly be relieved. In deeper parts the best method is that described by Cushing of nerve blocking. The vast majority of hernias, and, in fact, practically any operation near the surface, can be performed under local anesthesia. The speaker said he wanted to express his feeling, however, of the too sanguine note of those who are carried away with local anesthesia. He did not believe in selecting this form over general anesthesia in all cases in order to avoid shock. He had seen goitre operations in which the operator said there was no pain, but the patient was writhing. The shock in such an operation was undoubtedly greater than would have been the

case for a similar operation under a general anesthetic.

The use of local anesthesia in an inflamed area unless that area is thoroughly controlled by blocking the nerves at a distance from it, renders the anesthetic useless. The pain can be abated to a decided extent in any local anesthesia by giving a preliminary dose of morphine combined with scopolamine or hyoscine, but in large operations, upon reaching a sensitive area, a few whiffs of chloroform or ether should be added to it.

Dr. Stephen A. Harnsberger, of Catlett, stated that he was an advocate of chloroform, as he had had twenty years experience with it, and had found its action not uncertain if properly used. Its lethal or objectionable action is a contingent one, and is dependent upon, for the most part, the method of the anesthetist; second, the complexity of the physiology and pathology of the patient; and third, the lack of oxygen in the atmospheric air of the operating room. The method of the anesthetist determines in great measure the success of the operator as well as the safety of the patient. Haste and economy should not be considered. The drop by drop method, the dropper held high above the inhaler to better vaporize the chloroform, is the safest way to give it. A sudden dash of water in the face will shock the nervous and circulatory systems and a strong application of chloroform will do the same thing. The anesthetist who fails to examine the patient for physiological defects will certainly fail in his results. He should not only understand the physiological action of chloroform, but also its clinical action. He should know not only the personal but the family history of his patient; he should know not only his patient's physiology, but his pathology as well. It is a mistake to entrust the administration of chloroform to the mere graduate.

Dr. William Gwathmey, a professional anesthetist of New York City, spoke of the readiness with which we are all willing to give chloroform or have it given to our patients by friends, except when it comes to ourselves.

In regard to local anesthesia, he had seen about fifty cases of spinal anesthesia, and thirty-five of the cases were children under fifteen years of age. He had seen one or two

cases of failure of spinal analgesia under cocaine by some of the best surgeons, due to faulty preparation, but by the following method he had never seen one: Five grains of cocaine crystals are placed in a sterilized glass receptacle. Thirty minims of strong ether, from a freshly opened can is poured over it and gently stirred with a glass rod until the crystals are thoroughly dissolved. The ether is then removed by evaporation. First, a gelatinous paste is formed and then the cocaine is dried and powdered on a glass. One half ounce of cold sterilized water is added, making practically a two per cent. solution. A report of 500 cases showed no fatalities by this method and with a personal observation of fifty cases, he had seen only one case which was followed by alarming symptoms, including nausea and vomiting.

No one is justified in giving a pulmonary anesthetic if local analgesia will answer the purpose. The speaker referred to the great interest in New York in rectal anesthesia and said it was used when a pulmonary anesthetic is contra-indicated. Anesthesia is started with gas, then switched to ether, and when the patient is on the table, the tube is placed in the rectum. Two points in rectal anesthesia which have not been had in years past and which do away with fatality, are pressure and temperature. Temperature is gauged and care should be exercised as to pressure, over-pressure never being exerted. The speaker, in 1904, in a series of experiments killed hundreds of animals in the laboratory, using all the different anesthetics, first heating them to the temperature of the blood, and then to room temperature. He found that it took twice as long to kill an animal with warm chloroform or other anesthetic, using the same technique and amount. It applied more especially, however, to chloroform. This explains why it is safer to give chloroform in the South than in the North; and safer in summer than in winter. Then, again, in tropical countries it is impossible to get a patient under with ether, and chloroform has to be used by a more or less closed method.

There are so many anesthetics and so many sequences that we are not justified in recommending one to the exclusion of all others. Hewitt, in London, usually starts with gas,

then switches to ether, and after the patient has gotten the stimulating effect of the gas and ether upon the heart and respiration, he switches to chloroform. The speaker uses a one four-gallon bag of gas, and then switches to ether. If it is an abdominal case, he continues the closed method until the stitches are about to be applied, when he changes to chloroform. In that way there is less nausea and vomiting than in giving gas and oxygen. Hewitt states that the greatest progress that has been made lately is the interruption of gas and oxygen with nitrous oxide. The anesthetic as it is given to-day is hard to rely upon, though the speaker had given it as long as two hours when it acted beautifully.

Whether local anesthesia, spinal analgesia, or pulmonary anesthesia, is used, the patient, unless there is some contra-indication, should have a preliminary dose of morphine, graduated according to the size, age, and condition of the patient. If there is a contra-indication to morphine, give an enema of normal saline in seven to ten ounces of whiskey. It blocks the nerves, prevents shock, quiets the patient, and brings him to the table in normal condition. When switching from gas to ether or from ether to chloroform, the vomiting center is put in abeyance, as well as the other nervous centers, and where we are maintaining a degree of anesthesia just below the second stage, where we do not wish to give a drop more than is necessary, we can maintain that stage better with this preliminary medication than in any other way.

Dr. Lomax Gwathmey, in closing the discussion, said he had seen goitre operations where there was pain, but he did not think we did our duty by our patients unless there was no pain, and we can do this if we work sufficiently slowly.

Coffee greatly increases the formation of urea.—*Exchange*.

Locally in the treatment of acute tonsillitis hydrogen peroxide and guaiacum are recommended.—*Exchange*.

One drop of a one per cent. solution of nitroglycerine, three times a day, relieved a patient of albuminuria in a few days.—*Exchange*.

PERFORATING WOUNDS OF THE UTERUS, INFLECTED DURING THE COURSE OF INTRA-UTERINE INSTRUMENTATION.

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- A. GENERAL CONSIDERATIONS AS TO THE NATURE; AS TO CAUSES: PREDISPOSING; EXCITING.
- B. AN ANALYSIS OF ALL THE CASES PUBLISHED IN THE AMERICAN, ENGLISH, FRENCH AND GERMAN LITERATURE FROM 1895-1907, INCLUSIVE.*
- C. CONCLUSIONS.

(Continued from Last Issue.)

Any instrument that can be used or misused in the uterine cavity is capable of perforating the uterine wall. All forms of uterine sounds, of uterine dilators, of curettes (the St. Cyr Augur (41 a and b) curette included) can be incriminated. In the case No. 41 b, thirty-one inches of gut had been torn away by the augur curette. In the cases reported during the last ten years, it is stated in unmistakable terms, that the vulnerating instrument was:

1. Uterine douche tube, irrigator, catheter, 12 cases.

2. Uterine bougie, uterine sound, 17 cases.

3. Uterine dilators, 31 cases.

4. Uterine curette, 44 cases.

5. Miscellaneous agents, 50 cases.

In other cases the offending agent is either not stated or happened to be either a probe, (case 38), a wire (case 39), a meat skewer (case 15 b), an electrode (case 18).

Perforating wounds of the uterus are always of accidental occurrence. Nowadays, they are never intentionally inflicted. They have occurred in the hands of the most dextrous, of the most clever operators. The accident has occurred to Lawson Tait, (case 33), Anvard (Paris) (42), had one perforation in 270 uterine currettements. It cannot always be stated that they are due to ignorance, to incompetence, to carelessness. But it can be said that in the hands of a novice, in the hands of the careless, in the hands of the surgically unclean, all intra-uterine instruments are dangerous. It can also be stated that in most of the cases in

which death has followed upon uterine perforation, the perforating instrument had been introduced for criminal purposes. In 26 of the cases analyzed in the preparation of this article, the perforating instrument was introduced to end an undesired pregnancy. In some of the fatal cases where the perforating instrument was not introduced for criminal purposes, it had been guided by unclean hands.

In 1873, L. E. Dupuy (43) said: "I have found reported 17 cases in which the uterine wall has been perforated from within. In some of these cases, the uterus had been perforated at more than one point. All these patients made uneventful recoveries, in none were any measures taken either before or after the accident, to prevent the development of complications." In 1878, Carle Liebman (44) in reporting two cases of uterine perforations, treated expectantly and terminating in recovery, reviewed the subject quite exhaustively. In his article, Liebman makes the following statement: "In not one of the cases reported in the medical literature, and they exceed thirty in number, was the perforation of the uterine wall followed by alarming symptoms." Liebman compares the accident to paracentesis, to exploratory punctures of organs, procedures which are usually considered harmless. Lenoir (45) says: "These performances have proved interesting to us, not only on account of their frequency, but also on account of their innocuousness."

Lawson Tait (33) had never seen any ill results follow perforations of the uterus by a uterine sound. In not one of the reported cases, in which the perforating instrument was a sound, did death occur. The sound is a much less dangerous instrument than the curette. It makes a smooth hole, while that made by the curette is apt to be ragged. The aforementioned authors conclude from their study of literature and from their personal experience that perforated wounds of the uterus are relatively benign, are unattended with danger. Their opinion is erroneous and is completely disproved by the study of the literature of the subject that has been published during the last twelve years.

The dangers of perforating wounds of the uterus are manifold. Independent of the danger of shock, there is the danger of hemorrhage into the pelvic and general peritoneal cavities,

*All the literature to which I have had access. The figures and letters included in () refer to corresponding figures, etc., in the References appended to this article, which article, because of its length, will have to be continued in successive issues of this journal.

into the pelvic connective tissues, of injuries to the peritoneum, of injuries of the intra-abdominal organs, etc. In twenty-three of the fatal cases, it is definitely stated that a diffuse suppurative peritonitis was present. There is danger of traumatizing the omentum, of traumatizing the intestines. In 35 cases it is stated that positive injury was inflicted to the intestines or to the omentum. Any of these dangers can prove fatal. In Donald McCrae's case (10b), the patient bled to death. She died three hours after the infliction of the perforation. The uterus, in this case, showed practically no pathology. Several months before, patient had had a miscarriage. At the time of the perforation, twenty-eight inches of intestines were pulled out through the perforation and twisted off by actual force. Shock, hemorrhage, visceral injuries and infection may be associated in the same individual case. If a larger tear has been made in the uterus, there is danger of a loop of intestines or of a part of the omentum slipping into the rent and becoming strangulated. (Cases 11, 20). The gut may only be incarcerated, not strangulated in the rent (case 46). In Kustner's cases (34 a and b), the omentum escaped into the uterine cavity. Following these two (Kustner's) unrecognized cases, prolonged and irregular uterine bleeding occurred. Eventually vaginal hysterectomy was done in both cases, and on section, each uterus was found to contain grape-like pieces of omentum. The omentum may plug the uterine perforation (21, 47). In cases of perforation of the posterior wall of the uterus, near the fundus, if the omentum hangs low into the pelvic cavity, it is very liable to become entangled in the curette and drawn through the perforation into the uterine cavity, even into the vagina. If the patient recover from the perforation, the site of the cicatrix, apparently, does not interfere with the subsequent development of pregnancy, as evidenced by cases 22, 27, 28, 47, 48, 49, 50. In one case (27) though the uterus had been perforated at seven different places, patient subsequently became pregnant and was delivered of a living child. In one case (47), the site of perforation was sought at the time of delivery in a subsequent pregnancy. No trace of it could be found. Henck's case (5) is the only case reported, in which the perforation is said to have

enlarged at a subsequent pregnancy and to have complicated delivery.

How can the frequency of these perforations be lessened? How can the morbidity and the mortality, incident to their occurrence, be lessened?

- A. By the non-employment of inappropriate or defective instruments.
- B. By never entering the uterine cavity in the absence of indications.
- C. By never entering the cavity of the uterus in the presence of contra-indications, such as pus in the tubes, the ovaries or around the uterus; in acute gonorrheal endometritis, in acute septic endometritis, etc. The existence of an extra-uterine pregnancy is a contra-indication to curettage.
- D. By perfecting our surgical technique.
- E. By familiarizing ourselves with the conditions that predispose to the occurrence of uterine perforation. For instance, in removing pedunculated uterine submucous fibroids; the peritoneal cavity is liable to be opened as in cases (46, 52 a and b).

In a few words, by keeping in mind in connection with intra-uterine work, that there are: (1) dangerous instruments; (2) dangerous uteri; (3) dangerous maneuvers.

The use in the uterus by inexperienced hands of placental forceps is always dangerous. It is needless, as the finger can do more effective work. Even the finger has difficulty, at times, in differentiating between placental tissues, blood clot, and intestines. The uterine sound or hysterometer is an instrument of very little usefulness. In most cases, the size, mobility, and position of the uterus can be better and more safely determined by bimanual, vaginal, abdominal examination. Laminaria tents should always be as long as the uterus; otherwise, the lower end of the laminaria, instead of projecting a little below the external os, is liable to slip into the uterine cavity. Should then the long axis of the laminaria not remain exactly in that of the uterine cavity, the lower end of the tent becomes impinged against the uterine wall. The uterine contractions may drive that end partly or entirely through the uterine wall. The use of laminaria tents produces a more gradual dilation of the cervical canal. This is

an advantage, which, in our opinion, is counterbalanced by the fact that the patient has 16 or 24 hours of pain. We believe that tupelo tents can with advantage be banished from the gynecologist's armamentarium. The danger of infection from the use of tents is great (Dudley, Chicago, Kelly, Baltimore).

The three bladed steel dilator is considered dangerous. It has been nicknamed "the perforating dilator" (case 53). Its use is to be discouraged. Hegar's graduated metallic dilating bougies are serviceable instruments. They should not be introduced much beyond the external os. Their function is to dilate the cavity of the cervix uteri, not that of the corpus uteri. It would be advisable that they be marked off in centimeters, so that the operator would know at all times how deeply they are introduced. Whenever the fundus uteri is perforated by a Hegar's dilator, the operator is to blame.

As to uterine curettes, there does not seem to be any pattern which cannot, suitable conditions being present, determine a perforation of the uterus. The blunt and the sharp, the fenestrated and the non-fenestrated, the even-margined and the sinuous margined curettes are each reported as having perforated the uterine wall. It is better to use a curette, the shank of which may be bent like a probe, so as to be made to conform to the direction of the uterine canal. A curette which is pliable and curved and broad above is less liable to cause perforation, than one which has a narrow upper end and which is rigid and straight. Some models of fenestrated curettes are very apt to catch muscular tissues.

The introduction into the uterus of the finger or of instruments should not be regarded lightly. With but few exceptions, all these perforations have occurred during the operations of dilatation of the cervical canal or during that of curettement of the uterine cavity. These two operations, cervical dilatation and uterine curettage, when performed with due precautions as to asepsis, as to preoperative preparation of the patient, such as emptying of the lower bowel and catheterization of the urinary bladder, are, relatively, of great efficiency. Following their performance, judicious after treatment is of great importance and should not be overlooked. These two operations should not be performed in the absence of positive indica-

tions. They are better performed with the aid of an assistant.

The indications for dilatation of the cervical canal are:

1. As a preliminary measure to (a) intra-uterine exploration; (b) uterine curettage and other intra-uterine maneuvers.

2. As a therapeutic measure in dysmenorrhea.

Dilatation or divulsion alone is not to be considered a specific for dysmenorrhea. A considerable number of cases of dysmenorrhea are not in the slightest degree benefited by this operative procedure. In the marked dysmenorrhea, at times, associated with uterine ante flexion, Dudley's operation will be found very serviceable. In dysmenorrhea, due to stenosis of the external os, Pozzi's operation is valuable. Dilatation alone, is valueless in the treatment of dysmenorrhea due to any of the various malpositions of the uterus. We must treat the cause or the causes which determine the occurrence of the symptom, dysmenorrhea.

The indications for uterine curettage are:

1. To remove placental debris, etc. In this connection, let us state that in the opinion of such men as Coe, Pinard, etc., the aseptic finger is the best instrument to introduce into the puerperal uterus for the purpose of removing decidual remnants and blood clots. Pinard, for the post-abortion or post-partum removal of placental debris, rejects the use of the curette and teaches that in all cases of retained secundines, the finger should be employed for their removal. He considers it safer and more thorough. There are limits, however, to the power of the human digits and, at times, the curette will be found a valuable auxiliary to the finger. For the exploration of the uterine cavity, the finger, by virtue of its tactile sensibility, is far superior to any instrument. The curette is a blind agent (Le Page, Pinard, Budin).

2. As an aid to diagnosis—In decidual endometritis, uterine tuberculosis, carcinoma, chorion-epithelioma and other intra-uterine inflammatory or neoplastic processes, the use of the curette as a diagnostic aid is a recognized and sanctioned procedure.

Where carcinoma of the corpus uteri is suspected, the curette must be used with great precaution and only to remove small pieces for diagnosis. Again, in those cases, where curettage

has been previously performed, great care, great gentleness is necessary, because it sometimes happens, that the uterine wall has been previously too deeply scraped, and then the danger of perforating the organ is imminent (54, 55 a and b).

3. To remove abnormal endometrium, causing dysmenorrhea and sterility; to induce involution of the uterus; as to whether it is wise to curette an empty septic uterus following on labor or abortion, clinicians differ. Naturally, if the uterus contains retained placental tissue, this must be removed. If the curette is used, venous sinuses and lymphatic channels are opened and the protecting barrier of leucocytes is interfered with and possibly removed in places. Further, the Fallopian tube may thus also become infected.

4. To remove the remains of a mole pregnancy.

5. In the treatment of inoperable carcinoma of the cervix. In this condition septic absorption is one of the common causes of immediate distress; curetting the fungating mass and subsequent treatment of the raw surface with strong formalin, frequently does away with sepsis, hemorrhage and pain.

C. What are some of the contra-indications to utero-cervical dilatation or to uterine curettage?

(a.) The absence of a positive indication.

(b.) The presence of a suppurative process, either in the uterus, in the uterine adnexae, in the parametrium or in any other pelvic organ or structure.

(c) The presence of such conditions as phlegmasia alba dolens, of uterine or peri-uterine thrombo-phlebitis. The curette is liable to disturb the thrombi in the uterine veins, at the placental site, or in the plexus pampiniformis (Byron Robinson) (56).

D. By perfecting our surgical technique, the occurrence of this accident, perforation of the uterus, will become a rarity.

Before undertaking any intra-uterine maneuver, determine:

(a.) By vaginal examination.

(b.) By bi-manual, vagino-abdominal examination.

1. The presence or absence of adnexial or periadnexial disease. Curettement has deter-

mined the rupture of tubal, peritubal, ovarian, peri-ovarian and peri-uterine pus collections.

2. The size, the shape, the mobility and the consistency of the uterus. If the uterus be bound down or immobile as a result of adhesions due to previous pelvic inflammatory processes, it is far more liable to be perforated. Under such conditions, it does not yield to the impact of the instrument, it does not accommodate itself to the pressure exerted by the sound, curette, etc.

3. The presence or absence of tumors upon or within the uterus.

4. Some operators further recommend, that the depth and direction of the uterine cavity be determined by the careful use of the graduated uterine sound or by the hystrometer, and that any deviation from the normal be noted. The use of the uterine sound as a means of ascertaining the depth and direction of the uterine cavity is condemned by most operators. They rightly claim that the same information can be more safely determined by bi-manual vagino-abdominal examination. In case 57 the uterus was anteflexed; in cases 12 c, 57 and 58 a and b, it was retro-flexed. In case 59 it was retroverted, in case 45 it was anteverted, in case 60 latero-flexed. All malpositions, congenital or acquired, of the uterus, if recognized, predispose to perforation during the course of intra-uterine maneuvers. Malposed uteri are most frequently perforated opposite the point of angulation. The nutrition of the uterine tissues being impaired at the point of flexure explains the not uncommon occurrence of perforation at this point. In a retroflexed uterus, it is the anterior wall which is more liable to be perforated; in an anteflexed uterus, the posterior wall.

5. Get a mental picture, as clear as possible, of the pelvic organs. Having a definite mind picture of the pelvic conditions existing in the individual case, if a uterine perforation occurs, it is more immediately recognized, and one desists from further intra-uterine instrumentation. For instance, suppose that in a given case, the uterus has, by examination, been determined to be normal in size, in volume, and in position, and that during the introduction of the uterine instrument, the latter slips much to one side of the median line and to a depth greater than that of the uterine cavity, perforation will then immediately be diagnosed.

6. Observe the most rigid asepsis during the course of the operation, and see that from the standpoint of asepsis and antisepsis, the patient has been prepared as carefully as though you were going to perform a laparotomy. A complication, necessitating a laparotomy, may suddenly arise. In uterine wounds, be they inflicted by the sound, by the uterine dilator, or by the curette, you must minimize, you must avoid the liability of implantation of infection. Not much can be done to cure existing infection. Much can be done to prevent the occurrence of infection. The endometrium sits directly on the myometrium without an intervening sub-mucosa, to check endometrial infectious invasion.

(Continued in Next Issue.)

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REPORTS OF CLINICAL CASES.*

Rheumatoid Arthritis.

DR. J. E. PHILLIPS, *Suffolk, Va.*, brought the patient, male, aged 57 years, before the Society. Early years spent on farm; in school; study of medicine which he practiced five years. Was then in a drug store for 30 years. Was always prudent and temperate in all things save eating, in which respect he was rather over-indulgent.

Family history: Cancer, tuberculosis and glandular affection on maternal side, practically all having suffered more or less with joint trouble. Mother had rheumatic trouble, and cystitis late in life, from which latter death probably resulted. Father died of chronic bronchitis.

The patient presented himself for examination on Oct. 20, 1905. Up to that time had been in excellent health, except that in the spring of 1903, muscular soreness and the so-called rheumatic twinges began to develop. The joint of the right great toe became red, swollen, and extremely painful, and soon afterwards, the left great toe became involved. From this he made a fairly good recovery. Through the summer of 1903 the patient did very well, except that, late in the summer, he seemed weak and pale. During the following winter he began to develop trouble in his fingers. The trouble was progressive, until, at the end of 12 months, practically every joint was involved, including the temporo-maxillary. The involvement of this joint is characteristic of rheumatoid arthritis or arthritis deformans, and does not occur in articular rheumatism. The trouble, though progressive, was not acutely inflammatory. The summer of 1904 was fairly comfortable. In the winter of 1905, especially in March and April, the patient's locomotion became difficult, and there was loss of flesh and strength.

Having been a physician and a druggist, the patient had been treating himself with everything that he thought good for his trouble. In April, 1905, he took a trip to the Hot Springs,

*These original Reports of cases were made to the Medical Society of Virginia, in session at Richmond, October 21, 1908.

where he stayed six weeks, his general condition becoming worse, though relieved somewhat of pain. After his return there was a steady decline in flesh and strength, and he was forced to give up business. At this time there was marked enlargement of the joints. The teeth were in fairly good condition, the breath also was pure, and the quantity of urine good. The temperature went to 100 degrees. The patient was very anemic, and the temperature seemed to be that of anemia. No blood examination was made at that time. Upon examination of the heart, the organ was found to have healthy sound, both sounds being somewhat accentuated. The tension was high.

Dr. Phillips called attention to the fact that the family history was scrofulous or strumous; the peculiar shape of the fingers; that there was no acute inflammatory condition; that the temporo-maxillary joints were involved, and that the patient was anemic.

The patient was placed under a reconstructive treatment. A slight gain in weight followed, though the joints were enormously swollen, the limbs tender, the appearance bad, and the patient very weak. He was kept in bed nearly all the time until spring, and showed improvement on tonics, massage, and such treatment as he could get at home. The patient was advised to come to Richmond and put himself under the care of Dr. Walton for the electro-therapeutic treatment, baths, massage, etc. He did so. When he came here he could not walk; he can now walk 14 or 15 blocks, has gained 26 pounds, has no pain, and is doing well.

Rheumatoid Arthritis.

DR. J. C. WALTON, *Richmond, Va.*, stated that a patient presented himself on the 1st of July in a weak, anemic condition, confined to an invalid chair. He was given tonic and reconstructive treatment. Improvement was progressive and marked.

Rheumatoid arthritis or arthritis deformans is often confounded with chronic rheumatism, and though both of the conditions are sometimes present in the same subject, as a rule,

they are entirely distinct. Rheumatoid arthritis is frequently accompanied by the strumous diathesis. In the family of this patient all the brunettes had rheumatoid arthritis, and all the blondes had tuberculosis. Frequently you find the patient strumous, and whether you do or not, you may well be solicitous of its presence.

These patients have to be fed. It is a question of nutrition, tonics, out-door life, and physical therapeutics. Much can be done to relieve and restore them to health.

Dr. Walton stated that the main point he wished to impress was the importance of making a careful diagnosis between arthritis deformans and chronic rheumatism, one characteristic of the former being involvement of the temporo-maxillary joint, which is never found in articular rheumatism. The general health of the patient is usually impaired. Dr. Walton cautioned against making the mistake of treating cases of rheumatoid arthritis with rheumatic diet and medication.

Fracture of the Femur.

DR. CHARLES S. WEBB, *Bowling Green, Va.*, reported three cases: First, a child about three years old. A plaster bandage was used. Second, a girl of about 11 years. Third, a young man of about 21.

All got well without a particle of shortening by the most accurate measurements. According to most text books, fractures of the femur rarely get well without some shortening. One author states that he had never seen a case get well without some shortening, and he regarded half-inch to one inch as a splendid result.

Dr. Webb treats these cases with a combination of the long splint and weight and pulley. The splint reaches from just beneath the armpit to from 4 to 6 inches beyond the foot, with an upright piece at the foot extending about 2 inches below. The foot of the patient is about 6 inches from this lower piece. A hole is bored through this foot-piece, and another through the foot of the bed, and an ordinary pulley and weights applied. The weights must be exactly right. Just enough weight should

be used to get a good pull, but not enough to cause discomfort to the patient.

Operating in Appendicitis.

DR. CHARLES S. WEBB, *Bowling Green, Va.*, referring to the discussion at the last meeting of the Society at Chase City in regard to the medical and surgical treatment of appendicitis, stated that, at that time, he called attention to perhaps a dozen cases of appendicitis he had treated medically. He reported two typical cases since that time in which he gave the patients their choice, telling them that 80 per cent. of cases got well under medical and 98 per cent. under surgical treatment. They both elected to be treated medically, and are perfectly well to-day, having had no recurrence.

Cancer.

DR. A. L. TYNES, *Fishersville, Va.*, referring to his statistical report of cancer cases, made at the last meeting of the Society, stated that he had recently lost another case of cancer of the stomach. The patient, a negro woman, had been serving the family of Mrs. B. for a number of years. The point emphasized by Dr. Tynes was that Mrs. B., two years ago, died of cancer. The patient had been living all the time within 300 yards of Mrs. B.

Exactly one mile from the negro woman, Dr. Tynes has another patient, a woman, suffering from an abdominal tumor, immovable, very hard and tender. She has recently lost 40 or 50 pounds in weight, and is going down-hill very rapidly. A positive diagnosis of cancer has not been made. The patient is quite old. The negro woman who has just died was a servant in the family of Mrs. B. and of this present patient, going from one to the other, but in the employment of one or the other nearly every week for 20 years. Both Mrs. B. and the negro woman died of cancer, and this third woman is now affected with a disease which is probably cancer. Dr. Tynes mentioned these cases, hoping that physicians would favor him with reports of other cases.

Cancer.

DR. L. G. PEDIGO, *Roanoke, Va.*, discussing

the contagiousness of cancer, referred to a case a few years ago of Dr. Burnette. It was a question whether it was a case of contagion or the accidental grafting of a piece of cancerous tissue into a wound. The doctor had cauterized a cancer on the tip of the tongue of a patient, and had pressed the material on with his finger. Immediately after he shaved, and cutting himself slightly, staunched the blood with the same finger, which had not been cleansed. The wound did not heal kindly, and pretty soon a growth developed. Dr. Burnette's patient died of cancer, and pretty soon afterwards he, too, died of cancer. His case was inoperable on account of the blood vessels of the neck. When he died it was spoken of as a case of contagion, but there is a question whether cancerous tissue was not engrafted into the wound.

Raynaud's Disease.

DR. J. C. WALTON, *Richmond, Va.*, reported the only case of Raynaud's disease he had ever treated. A lady of refinement and culture presented the following symptoms: She came to the office Sunday morning, having passed only one pint of urine since the preceding Tuesday. The circulation was very poor. In this condition, one or more of the toes, and sometimes the fingers, ears and nose become cold, hard, the circulation becomes bad, and the skin discolored. In this case, three of the patient's toes of one foot became purple, cold and painful three years ago at the birth of her first child. Two years later, at the birth of another child, the same condition occurred in the opposite foot. The pathology of the disease is rather obscure, but it is thought to be some vaso-motor trouble. Along with the disease was marked psoriasis.

The patient was under my care for nine weeks and experienced great relief of her symptoms. The toes lost the purple color and became warm. The psoriasis was entirely cured at the end of the ninth week, and the patient, refusing to stay longer for treatment, went home. The case is not well, but wonderfully improved. The treatment was hydro-therapy, photo-therapy and massage.

Raynaud's Disease.

DR. J. E. COPELAND, *Round Hill, Va.*, reported a case of Raynaud's disease in a lady 40 years of age. Her limbs and toes were involved. The treatment was iodide of potash, 15-20 minims Lugol's solution. The patient recovered. It was the only case of Raynaud's disease Dr. Copeland had ever seen, but it presented all the symptoms to which Dr. Walton referred, though there was no psoriasis.

Chronic Parenchymatous Bright's Disease.

DR. MARK W. PEYSER, *Richmond, Va.*, reported the case of a woman, 75 years of age, the wife of a physician. She had been complaining for a number of years. Her custom had been to go to her attending physician when she felt badly. Examination revealed chronic Bright's disease. She had the ordinary symptoms; the ordinary treatment was pursued, and was succeeded by the ordinary results. Dr. Peyser finally suggested the use of static electricity. He had never treated a case in this way, and did not believe it could do any good in this case, except, perhaps, to produce a feeling of well-being. Two months later, after 21 treatments, the patient had recovered so far as could be determined by microscopic and chemical examination of the urine. That was about two years ago. Systematic examination of the urine every month shows it still to be free from albumin and casts. The patient, of course, has the natural debility of old age, but as far as the kidneys are concerned, is evidently in very good health.

The treatment consisted of a static wave applied to the kidneys at every alternate treatment, the negative head breeze being used at other times. The patient took no medicine whatever during the electrical treatment, and the conclusion must be that the electricity produced the cure.

Anasarca.

DR. MARK W. PEYSER, *Richmond, Va.*, reported another case referred to him, a man, blind since his ninth year. The patient was in a condition of anasarca. He was treated

by electricity, taking ten treatments, at which time, being very nervous and fearful, he discontinued the treatment and went home. So far as could be seen there was no effect whatever. The attendant physician stated, however, about two months later that under further medication the anasarca had been reduced to a great extent, though there were still casts and albumin in the urine. If the patient had not allowed his fear to overcome him, Dr. Peyser believes the results would have been very good in this case also.

Editorial.

The Medical Society of Virginia

Held its thirty-ninth annual session in the Jefferson Hotel, Richmond, October 20-23, 1908. About five hundred physicians registered attendance, while a number, more especially local members, failed to register at all.

This was the first meeting at which the new Constitution and By-laws were given a practical test, and it seems to be generally conceded that the plans, with possibly the exception of a few rough edges which will be smoothed over with time, will prove highly satisfactory. In spite of the fact, however, that the Executive Council relieves the Society of practically all business, thus allowing the time saved to be devoted to the reading and discussion of papers, it was impossible to read and discuss the large number of papers printed on the annual program in the time allotted. Consequently, the adoption of a recommendation by the Council that the papers be read respectively before Medical and Surgical sections will likely prove the best solution of the question.

The address of the President, Dr. W. F. Drewry, of Petersburg, directed attention to many subjects of vital importance to both physician and layman, and it was regrettable that the acoustics of the assembly hall were so miserable as to make it difficult for even those close to the speaker to hear what was being said. The paper in full appeared in the last issue of the *Semi-Monthly*.

The report of the work done by the retiring

Executive Committee was read by its Chairman, Dr. P. A. Irving, of Richmond, and adopted without discussion. The subject for general discussion—A Symposium on Anesthetics—proved instructive, and full abstracts of each of the four papers appear in this issue of the journal. Several members also made reports of interesting clinical cases, and these likewise will be found in this issue.

The following distinguished physicians were present as invited guests: Drs. Frederick Petersen, of New York City; P. M. Rixey, Surgeon General, U. S. Navy, of Washington, D. C., and Lewis Coleman Morris, of Birmingham, Ala.; each one reading a paper.

The following are the members of the Executive Council: First Congressional District, Dr. Clarence Porter Jones, Newport News; Second, Dr. E. E. Field, Norfolk; Third, Dr. A. L. Gray, Richmond; Fourth, Dr. S. A. Hinton, Petersburg; Fifth, Dr. J. M. Shackelford, Martinsville; Sixth, Dr. Geo. J. Tompkins, Lynchburg; Seventh, Dr. W. P. McGuire, Winchester; Eighth, Dr. T. C. Quick, Falls Church; Ninth, Dr. J. T. Graham, Wytheville; and Tenth, Dr. M. J. Payne, Staunton.

Councillors at Large are: Drs. P. A. Irving, Richmond; Stephen Harnsberger, Catlett; M. M. Pearson, Bristol; Kirkland Ruffin, Norfolk, and J. R. Gildersleeve, of Tazewell. The President is member *ex-officio*.

The report of the Executive Council was read and adopted as a whole, there being little or no discussion by the open Society as to the recommendations and nominations made. The following officers and committees were elected for the ensuing year: *President*, Dr. Stuart McGuire, of Richmond; *Vice-Presidents*, Drs. O. C. Wright, of Jarratt; E. T. Brady, of Abingdon, and Reid White, of Lexington. *Secretary*, Dr. Landon B. Edwards, of Richmond; *Treasurer*, Dr. R. M. Slaughter, of Theological Seminary; *Judiciary Committee*: Drs. Lewis C. Bosher, J. S. Irvine, C. T. St. Clair, Geo. B. Fadeley, J. Staige Davis and Lewis Holladay; *Membership Committee*: Drs. W. D. Turner, M. W. Peyser, W. F. Driver, J. Bolling Jones, and W. W. Chaffin; *Legislative Committees*: Drs. H. Stuart Mac

Lean, J. Wilton Hope, J. H. Ayers, and W. B. Payne; *Members of House of Delegates*, A. M. A.: Drs. J. Shelton Horsley, J. L. Kent, and W. E. Anderson.

Hereafter Society meetings will be held only in cities of not less than twenty-five thousand population. Roanoke was selected as meeting place for the next annual session, the time to be selected by the President, Secretary and local committee of arrangements. The Biographical Register will be limited to six lines after each name. A departure from the ordinary run of things is to be noted in the adoption of a resolution dividing the Society into two sections, viz.: Medical and Surgical. While there are objections to such division, it seems no other plan has yet been suggested as feasible if the increasingly large number of papers presented are to be read.

During the session one hundred and eighteen new members were elected.

Resolutions offered by the "Provisional Organization for the Prevention and Cure of Tuberculosis in Virginia" were endorsed and a committee is to be appointed by the Society Council to inaugurate an Association, the membership of which is not to be limited to the medical profession.

The subject for discussion at the next annual meeting will be "Pneumonia," with the following sub-divisions:—(a) In Adults, Dr. John Rennie, Petersburg, Leader; (b) In Children, Dr. W. E. Anderson, Farmville, Leader; (c) Treatment, Dr. W. A. Plecker, Hampton, Leader.

Executive Council proceedings will in no sense be secret, and any member of the Society may be present at any of its sessions.

In passing, we regret the retirement from the Legislative Committee of its erst-while Chairman, Dr. J. Beverly De Shazo. We do not know of another physician who has labored half so ardently and at half so much sacrifice as did Dr. De Shazo in the interest of Virginia doctors for the repeal of the oppressive and unjust special license tax.

The South Piedmont Medical Society

Will hold its next meeting at Danville, Va., November 17th. Drs. Geo. Ben Johnston and

Ennion G. Williams, of Richmond, will be present as invited guests, and read papers. Among the members of the Society who will contribute papers are Drs. Samuel Lile, of Lynchburg; W. J. Innes, of Brookneal; R. H. Fuller, of Clover; L. A. Robertson, of Danville, and H. C. Beckett, of Scottsburg. The subject for General Discussion will be "La Grippe—Its Treatment and Sequelae," with Dr. C. W. Pritchett, of Danville, as leader.

The Mississippi Valley Medical Association

Held its thirty-fourth annual meeting in Louisville, Ky., Oct. 13-15, 1908. The next annual meeting will be held in St. Louis, Mo., in October, 1909. The following is a list of the officers for this meeting:—Drs. J. A. Witherspoon, Nashville, Tenn., President; Louis Frank, Louisville, Ky., First Vice-President; Albert E. Sterne, Indianapolis, Ind., Second Vice-President; S. C. Stanton, Chicago, Ill., Treasurer, and Henry Enos Tuley, Louisville, Ky., Secretary.

Army Medical Corps Examinations.

The Surgeon General of the Army announces that examinations for the appointment of first lieutenants in the Army Medical Corps will be held January 11, 1909, at points to be hereafter designated. Full information can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C." One of the requirements is that the applicant shall have had at least one year's hospital training or its equivalent in practice.

Applications must be complete and in possession of The Adjutant General on or before Dec. 10, 1908. There are at present fifty-seven vacancies.

Examinations in the Public Health and Marine Hospital Service

Will be held in Washington, D. C., January 11, 1909, for the purpose of admitting candidates to the grade of assistant surgeon. For specific information regarding such examinations, address the Surgeon General, Public Health and Marine Hospital Service, Washington, D. C.

The Virginia Sanatorium for Consumptives.

Located at Ironville, Va., is an eleemosynary

institution for the prevention and cure of tuberculosis, giving modern hygienic-dietetic treatment at cost, or less, according to means of patient and institution. The regular rate is \$35 per month for all essentials, laundry included. The Sanatorium is intended for the large, intelligent middle-class patients, above charity, but yet unable to afford the necessary period of treatment in private sanatoria. Thus far, the results have been fully equal to those of any other sanatorium. Dr. J. Meade White, formerly of Leesburg, Va., who has had long experience in leading tuberculosis sanatoria, is Resident Physician. Dr. Joseph A. Gale of Roanoke, is President of the corporation, and Mr. D. W. R. Read, of Ironville, is Business Manager.

Obituary Record.

Dr. George Corrie

Died at his home at Knott's Island, N. C., October 10, 1908. He was born in the city of Richmond, Virginia, 1857; graduated in medicine from the Medical College of Virginia 1888; passed the Medical Examining Board of Virginia the same year, and became a member of the Medical Society of Virginia 1893, while practicing in Princess Anne county, Virginia, which membership he retained till his death. He moved to Knott's Island, N. C., about 1896. He died after a lingering illness of many months of Bright's disease.

In Memoriam—Dr. J. Prosser Harrison.

WHEREAS, In the order of Divine Providence, it hath pleased our Heavenly Father to remove from our midst our dear friend and associate, J. Prosser Harrison, and,

WHEREAS, By this interposition the Church Hill Medical Profession has sustained a deep and irreparable loss, and,

WHEREAS, The citizens of Richmond have lost a staunch and valued friend, one whose unswerving fidelity to principle and duty made him a defense against all enemies, and,

WHEREAS, He has exhibited the deepest solicitude for the welfare and rejoiced in the success of others, therefore, be it

RESOLVED, That we, as members of the Church Hill Medical Society, have lost in him a true and faithful friend, a wise counselor and a safe adviser; that we will cherish his memory with tender emotion and treasure in our hearts the truths he taught us when among us.

RESOLVED, That we tender to his bereaved family our heartfelt sympathy; and while we know the loss is bitter and grievous, yet we are reminded that "they sorrow not as those who have no hope"; that we commend them, in this their hour of affliction, to Him who saith, "I will never leave thee nor forsake thee, but will be a Father to the fatherless."

RESOLVED, That a copy of these resolutions be sent to the bereaved family, be spread on our minutes and be published in the public prints of this City.

Benj. A. Hord, M. D., J. F. Crane, M. D., M. W. Peyser, M. D., W. S. Beazley, M. D., Ramon D. Garcia, M. D., Committee.

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INTERSTITIAL KERATITIS DUE TO ACQUIRED SYPHILIS.*

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It is a well known fact that interstitial keratitis has been considered a pathognomonic symptom of congenital syphilis, but it was not until recently that interstitial keratitis was known to follow acquired syphilis. Mr. Hutchinson, in his classical memoir (*Ophthalmic Hospital Reports*, 1858) said: "Although I will not make so sweeping an assertion that interstitial keratitis never occurs except in a subject of inherited taint, yet I cannot conceal from myself, and have no wish to do so from my reader, that such is my present belief." In 1874, Mr. Morton, of Moorefields Hospital, published a case of interstitial keratitis in acquired syphilis, and Mr. Hutchinson changed his mind in the following manner: Referring to Mr. Morton's case, he said:—"So far as I know, Mr. Morton's case remains practically unique. I have seen a few doubtful and ill-marked parallels, but never one that could be properly placed by its side. Why keratitis should be so common in inherited syphilis and so rare in the acquired disease, is one of the pathological enigmas for which we have as yet no answer."

Dr. A. E. Davis, of New York, in a paper read before the Section in Ophthalmology of the American Medical Association, Chicago, June 25th, 1908, collated references to almost all the cases which have been reported of this rare affection. He pointed out that in the *Journal*

of the Association no case had been published since its establishment in 1883. He also states that no case has been reported in the *Transactions of the American Ophthalmological Society* since its first publication in 1864. This is true also of Knapp's *Archives of Ophthalmology* and a number of other well recognized ophthalmological journals. Only a little over 100 cases have been reported up to date in all the literature of the world, and in American literature about a dozen.

For my own part, I am free to say that not until within the last six months have I seen a case of interstitial keratitis which I could reasonably say was due to acquired syphilis. On making inquiry of a number of my colleagues, I have received the answer that they have seen a number of them in their lives but have never published them. Several observers have reported cases verbally in societies, but have not published them. Most of the text books of to-day make slight reference to the affection, without giving any particulars of it.

The three cases which I shall now report were without doubt due to acquired syphilis.

CASE I. A woman of 33, had acquired syphilis eight years before, and within the last six months I saw her for the first time. The right eye was the first affected, and on examining her I discovered that she had marked interstitial keratitis. The points of infiltration were clearly beneath the epithelium of the cornea in the substantia propria. There were a number of them about the size of the head of a pin, and another patch of a diffuse character. There was mild iritis, and the disagreeable symptoms which go along with that element of the trouble. The woman was a strong, stout individual, of apparently great vigor and vitality, with a beautiful complexion, and no mark whatever

*Read by title before the thirty-ninth annual meeting of the Medical Society of Virginia, at Richmond, October 20-23, 1908.

in teeth or the corners of her mouth, of acquired syphilitic infection. After I had treated her for a month, the other eye became sore and a picture of interstitial keratitis still more classical developed in that eye. This infiltration was almost altogether diffuse, and at one particular part of the cornea, namely, downward and outward, it showed the salmon patch, so rare in the acquired form, and common in the inherited. This eye was affected by iritis much more severely than the opposite one, it was more painful, and more obstinate in resistance to treatment. After diagnosis was made, the patient was put upon antisyphilitic treatment, inunctions of mercury, and iodide of potash internally. This was alternated by mixed treatment and mercury by the mouth, until her teeth were touched upon several occasions. Of course hot applications, atropine, and leeches were used to combat the iritis in particular.

The right eye improved so rapidly in three months that only one or two infiltrated points remained, but these particular points were not absorbed at all; while the left eye continued to be bad, the infiltration remained the same or became worse, and was in that unhappy condition when the patient passed out of my hands. It is interesting to note that I sent this patient to Mt. Clemens, Mich., at the end of about the fifth month. While she was there, my treatment was modified by the physician who had her in charge. When she returned at the end of about three weeks, I found that her eyes were better in general. The right eye was so much improved that it was scarcely possible to see the infiltration at all, and the left eye seemed to be on the rapid road to recovery. Nevertheless, in a week or ten days after her return, she developed a severe iritis of the left eye, the interstitial infiltration increased, and the patient was apparently worse than she was before, so far as the left eye was concerned. At this point she passed from under my observation. I satisfied myself by every known method that the inflammation of the cornea in this case was interstitial, and I can imagine no more typical picture of the disease.

CASE II.—Several weeks before I saw the patient just referred to, a married woman of 40 was brought to me by her family physician for consultation. Her husband, a man of 42 or 43, had within the antecedent three months suffered from a stroke of left-sided hemiplegia and hemianesthesia. The family physician stated that it was due to syphilis. The patient in question was an under-sized, poorly nourished, anemic individual, weighing about 115 lbs. She said that six months before, her right eye had commenced to be inflamed, and that she had suffered greatly. From the description, I could see that she had a severe iridocyclitis. On examining the right eye, I found a dense patch of infiltration downward and inward. The pupil was almost completely occluded, and a mass of organized lymph was observed. There was a slightly clear portion upward and outward, but other than this the pupil appeared to be tightly closed. She was unable to see anything except upward and outward in the direction of the aperture in the pupil, and she failed even to perceive a candle in a dark room in any other part of the field. From this I concluded that the posterior pole of the eye had been damaged. At the time that I saw her, there was absolutely no sign of acute inflammation. The sclera was white, the eye was painless, and there was no pain upon pressure in the ciliary region. She regarded this eye as lost, and was brought to me by her physician on account of what he and she thought to be the commencement of the same process in the opposite eye. When I saw her, the pupil of the left eye was slightly dilated with atropine; there was a pericorneal pinkness, lachrymation, photophobia, slight pain on pressure, and the optic disc was markedly hazy. Vision was 20/50, and she stated that it had fallen recently. There was no infiltration of the cornea, and the iris appeared to be bright. I concluded that the patient had had an acute iridocyclitis in the right eye, exudative in character, which had extended backward and affected the choroid; and although the right eye was not painful to pressure, I strongly suspected that sympathetic ophthalmia was developing in the right eye.

Since the right eye was practically useless as to sight, and the field was lacking in all except one limited area, I concluded that the right eye was of no value to her, and if the inflammation of the left eye was sympathetic in character it might be possible to prevent its loss by the removal of the right; and I suggested this in face of the fact that sympathetic irritation, if not inflammation, had already set in. I explained, however, to the family physician that the operation might not have any effect upon the course of the disease in the left eye, but that in my opinion it was the one chance to stop its progress. Although I had been informed that the husband of the woman had had a left hemiplegia, I nevertheless regarded the symptoms in the left eye as being the forerunner of an acute sympathetic ophthalmia, and that whatever the cause might be it was likely that the left eye would go the course of the right. I determined, therefore, to remove the useless eye and await developments in the left. The patient was anesthetized, and the right eye removed. The following day, the pericorneal injection was gone from the left eye; likewise the photophobia and lachrymation, but the hazy condition of the disc and the surrounding retina still existed.

Within a week the patient left the hospital, and the appearance of the optic disc and the retina was normal. I was unable to get the vision of that eye on account of the exceeding nervousness of the patient. The operation seemed to produce a powerful impression upon her nervous system. She returned at once to the country and I saw nothing more of her for two weeks, when she appeared at my office with a typical case of commencing interstitial keratitis of the left eye. I assured myself by every known method of examination that the infiltration was in the substantia propria of the cornea. It was distinctly of the diffuse character, and was concentrated into a nucleus of greater density toward the outside. There was considerable redness of the sclera, lachrymation, photophobia, and iritis. The infiltration finally extended over almost the entire cornea, reducing vision to movements of the hand or distinguishing light from darkness. The case

pursued an unhappy course, with recurrent exaggerated exacerbations of the iritis, and finally at the end of the fifth month the dense infiltration became invaded by blood vessels from the periphery. About two weeks after this observation, she appeared at my office one morning with the epithelium over the densest portion of the infiltration broken down, and a button-like staphyloma projecting from it. It was obvious that the epithelium of the cornea had given away, and the eye was on the road to destruction. Throughout the entire course of this attack the pupil remained small in spite of immense doses of atropine. The tension was at times increased, and would then recede and increase again, but I felt that it was necessary to keep the pupil as wide as possible, else the eye would certainly meet the fate of its fellow.

When the button-like staphyloma appeared, the question arose of what to do with that. I concluded to keep the patient in town and observe her the following morning; the staphyloma was then found to be twice the size it was the day before. I applied the actual cautery and burnt it down to the level of the surrounding cornea. Within 48 hours it had again commenced to bulge, when I applied the cautery once more. It then ceased to project, the epithelium recovered the area, and the iritis got slightly better. I commenced to feed the patient on a strong diet, giving cod liver oil and porter in the middle of the day and at night. In the meantime, the iodide had been discontinued for about a month on account of the terrible depression it produced on her nervous system and her digestion. From this time on the patient commenced to improve, having, however, repeated mild attacks of iritis, for which the atropine had to be again increased. At present, about seven months since I first saw her, there is a classical infiltration of interstitial keratitis, and the epithelium over the staphyloma appears to be entirely re-established. The pupil is larger, the eye is less irritated, the infiltration is slowly disappearing, and the patient is beginning to see the outlines of objects.

In view of the erratic course of the inflam

mation in this case, it may be argued that this is not strictly speaking a case of interstitial keratitis, but I have already affirmed and I repeat that the infiltration was in the deep layers of the cornea and nowhere else until the epithelium broke down over the densest portion of the infiltration. I feel absolutely sure that the breaking down of the epithelium and the formation of the staphyloma was due to the wretched condition of her nutrition, and that the recovery of the staphyloma was due not only to the actual cautery which was boldly applied at the proper time, but also to the withdrawal of the potash and the increase of nourishment. Her field of vision appears to be normal, and it is safe to say that the posterior choroidal tract has not been involved. It is highly probable that the patient will recover with useful sight, in view of the progress which she has recently made.

CASE III.—I can only refer to this case in a superficial manner, as I saw the patient only on one occasion, but I then convinced myself beyond a doubt that the inflammation was in the substance proper of the cornea. He was a strong, stout man of 27 years, who admitted syphilis contracted about eight years previously. The infiltration was at the center of the cornea, was marked, and was diffuse. I saw him for only a few moments at the clinic, and was not able to obtain his sight. There were no evidences of congenital syphilis. He had been under treatment for a number of weeks, but becoming dissatisfied, passed out of our hands.

In none of these cases was there any sign of the Hutchinson teeth, or any history of eye inflammation antedating that which I observed; nor did I see in any of the patients any marks indicating the pre-existence of ragades. None of them had the saddleback nose, and none of them had ozena, which I have so frequently observed in patients having saddleback noses. Just here I would like to remark that I have observed in every case of congenital interstitial keratitis a high vault of the pharynx. I have noted this for many years, and have come to regard it as one of the marked symptoms of congenital syphilis. I think it should be regarded

as one of the classical symptoms of acquired syphilis.

There has been some discussion as to whether a person with congenital syphilis can acquire it. I can state positively that I have seen a case in which acquired syphilis was engrafted upon the congenital form. Many years ago I had occasion to take care of a young girl and her brother; the former was about 18 years old, and the latter about 20. The girl had the classical Hutchinson teeth and the young man strongly marked interstitial keratitis. The girl had never had any trouble with her eyes and the brother had sound teeth. Nevertheless the young man acquired syphilis, admitted the fact, and when I was treating him had caries of the hard palate, together with other manifestations of acquired syphilis.

Mendel has likewise reported the case of a young man who had congenital syphilis and suffered considerably from it during the first years of his life. Later, at 21 years of age, he acquired syphilis and subsequently developed typical interstitial keratitis.

It is interesting to note in this connection that J. Herbert Fisher has expressed the opinion that interstitial keratitis from acquired syphilis is generally a tertiary lesion. It is well known that this form of keratitis is seen most usually in childhood, but is also well known to occur in mature life. For my part, I have seen it several times between 40 and 50, and frequently between 30 and 40.

Since my recent study of this subject, I have entertained the thought that possibly the cases of interstitial keratitis which occur at or about middle age may, in the absence of signs of congenital taint, be assigned to the acquired one. It is at least a reasonable suggestion and worthy of investigation. Mr. Sidney Stephenson, in discussing this subject, has pointed out that of the 100 cases of this disease which have been reported, it has been shown that the average time of development after the primary lesion is 10.8 years. This supports in a strong way the suggestion made above. Nuel has expressed the opinion that interstitial keratitis is secondary to inflammation of the anterior uveal tract.

I doubt the truth of this view, and it is certainly not supported by the weight of evidence before us.

In my second case the whole of the uveal tract was involved in the right eye, while in the left the first signs were in the main in the posterior pole. Nevertheless, there was severe involvement of the anterior uveal tract later. It would be safe to modify the opinions of Stephenson and Nuel by saying that the anterior uveal tract is always involved in this form of keratitis,—a thing which has been recognized already by all.

Members of this Society, I believe, will be interested to know that this disease has been produced in the lower animals by inoculations from the chancres of the human being, particularly in rabbits and monkeys. The spirochetæ have been found in the lesions produced. In this connection I believe it will be pertinent to mention a case of eye disease which I have recently seen in one of the lower animals, namely, a dog.

A gentleman who possesses a very fine animal, requested me to give him some advice about the condition of his dog's eyes, which, he said, had been described as cataract by a veterinary. On examining the animal's eyes, I found a marked case of interstitial keratitis on each side; the cornea presented the stippled appearance which is characteristic of the diffuse form; the light reflex passed unbroken over the entire cornea, resembling the reflex from fine china. The entire cornea was involved on each side so that the iris and pupil could not be distinctly seen. On the left cornea there was a yellowish white patch to the outer side which strongly resembled the so-called salmon patch frequently found in the congenital form. There were no blood vessels on or in the cornea, and there was no congestion of the sclera. The latter was perfectly white. I used atropine and two per cent. dionin for several weeks, and thought I perceived some improvement, but as the dog's master left the city at that time the case passed from my hands. I sent it to a colleague in a neighboring city, but did not hear from him. I do not know whether he saw the animal, or considered

the case beneath his dignity. On the 30th day of September the dog's master sent him to me again, after the treatment had been continued for about three months. I found that both eyes had markedly improved, the left one especially. In the latter the cornea had cleared entirely at the periphery, while the salmon patch had lost the yellow tinge, and had become thinner. The iris and pupil could be clearly seen. On the left side the cornea was not as clear as on the right, but nevertheless it had improved. That this was a case of interstitial keratitis I assured myself by the bifocal microscope, and all the other methods by which we assure ourselves of the presence of inflammatory products beneath the surface of the cornea. The respects in which the case differed from cases of human interstitial keratitis were the absence of blood vessels in the cornea, of iritis and of pericorneal inflammation and injection,—in short, the signs of acute inflammation. It is interesting to note the marked improvement in the infiltration following the treatment.

There has been some discussion as to whether the true salmon patch ever occurs in the acquired form of this disease. Trousseau has said that it never occurs, and G. A. Critchett was never able to satisfy himself that he had ever seen it. J. B. Lawford and Marlow have reported indubitable cases of it. It was present in my first case, and it certainly was present in the case of the dog, if that case can be classed amongst the others. There seems to be no doubt that the salmon patch of Hutchinson occurs in this form of disease. The prognosis in the congenital form is generally good, but I think the prognosis in the acquired form should be guarded. Mr. Griffith, in discussing Mr. Lawford's case, said that one of his cases had terminated with practical loss of sight—with simple perception of light. The authenticity of my second case may be doubted by some, but for my part I feel satisfied as to the correctness of the diagnosis by reason of the physical findings and the history of the husband's case. The otherwise erratic course was due to other causes. I believe that the first eye had been lost by this disease, in view of the

subsequent developments, and that the irido-cyclitis had been a part of the interstitial keratitis. Having come to this conclusion, the question arises whether it was good practice to have removed the first eye. My defense is that the first eye was almost totally blind from what was evidently an irido-cyclitis plastica, and that the left one showed the signs of sympathetic inflammation. When I saw this disappear at once after the enucleation, I congratulated myself on my good practice. The subsequent events proved me wrong. The enucleation was not classically indicated, yet I believe it was of advantage to the left eye in the severe inflammation which supervened. This is at least a comforting reflection.

Some have maintained that the two forms can be differentiated from one another, but for my part I cannot hold this view. My first case in which the patient confessed syphilis was absolutely classical from my standpoint. As I have already suggested, the great probability is that many cases which have been put down as congenital interstitial keratitis are in reality the acquired form, and I repeat I believe that many, if not all, of those cases which occur late in life are of the acquired form. However, I do not believe that the two forms can be separated from one another by virtue of the clinical picture. The recent interest which has been shown in this subject doubtless will result in more cases of the acquired form being reported.

It has been suggested that the differential diagnosis between this disease and tuberculous keratitis is difficult. Certainly there are many points of similarity, but the history of the case and the tuberculin reaction should be the main reliance in settling the diagnosis.

It is difficult to describe the pathology of interstitial keratitis. Mr. J. Herbert Parsons, in his classic, "The Pathology of the Eye," states that it is difficult to determine the exact anatomy of the disease. And when he says that, the last word has been said up to this time. Suffice it to say that it is an infiltration and inflammation of the substance proper of the cornea; but, as Mr. Parsons further says, the microscopic findings have been few, and have

been complicated by other conditions. He also remarks that the disease is rare, and is usually restricted to one eye.

It is fair to conclude these reflections by saying that interstitial keratitis may occur as a result of acquired syphilis; that it is in a more or less late lesion; that as a rule it is restricted to one eye; that it is practically identical in its clinical aspect with the congenital form; that its pathology is rather indeterminate, and that the prognosis is generally good.

11 East 48th Street.

REMARKS ON DIRECT INSPECTION OF THE WINDPIPE, GULLET AND STOMACH.*

By JOSEPH A. WHITE, M. D., Richmond, Va.

Professor of Ophthalmology, and Associate Professor of Rhinology, Laryngology and Otology, University College of Medicine.

In presenting to your consideration the most approved and recent method of investigating pathological conditions of the windpipes and swallowing tube, I am well aware that to many of you there is no novelty in these procedures, but there are still many who have not had an opportunity to become familiar with them, and to whom, therefore, they may prove a subject of interest.

You are all acquainted with the indirect means of examining the larynx by reflecting its image in a mirror held in the back of the mouth. Some of you have also seen the œsophagus inspected in a similar way after introducing the œsophagoscope. Direct inspection, however, of the larynx, bronchial tubes, œsophagus and stomach, by passing hollow tubes with their distal end sufficiently illuminated by an electric lamp to see the condition of their mucous lining, is an advance in this kind of work that very few of you have seen, and fewer have attempted.

My personal experience with these instruments has not been as yet very extensive, but still both Dr. Dunn and I have used them sufficiently often to be able to give you a good idea of their practical value for diagnosis, the application of remedies, the removal of foreign bodies, etc.

*Read before the thirty-ninth annual session of the Medical Society of Virginia, held at Richmond, Oct. 20-23, 1908.

This can easily be demonstrated both on dogs and on human subjects, as you can see at my clinic to-morrow morning at nine o'clock. In short, thick-necked individuals, some difficulty is occasionally met with, but an experienced operator will find very little trouble in most subjects who have been put thoroughly under the influence of a general anesthetic, and in many it is equally easy with local anesthesia alone.

Asepsis.—The strictest aseptic technique must be followed to avoid conveying any communicable disease to the patient. Absolute asepsis of the field is impossible, but the mouth should be made as sterile as possible with thirty per cent. solution of alcohol.

Anesthesia.—For laryngoscopy, local anesthesia is usually sufficient, except in very young children. First apply a four per cent. solution of cocaine on a cotton holder, and in a few minutes a ten per cent. solution should be thoroughly applied to the epiglottis and contiguous tissues. The tubular speculum is then passed behind the epiglottis, and a twenty per cent. solution applied to the larynx itself. In children for any operation, in the absence of dyspnoea, chloroform is preferable.

For *bronchoscopy*, a dose of morphia should be given, or an injection of morphia, scopolamin and cactin, an hour before applying the cocaine, helps considerably—the objection being that it may destroy the cough reflex which, in some cases, might be unsafe. Cocaine is used as in laryngoscopy, and as the tube is passed into the trachea and bronchi, cocaine and adrenalin are applied to the mucous lining by dropping it down the tube with a pipette.

In passing the tube through the cords, we must watch for the inspiratory excursion apart of the cords, and push it through quickly. Otherwise, if the tube touches the cords when they are coming together in expiration they will remain closed, and the tube will not pass as easily. Passing the tube through a tracheal opening is easier, and is called “lower bronchoscopy.”

Sometimes secretions prove a difficulty, but not in all cases, and they must be pumped away with the aspirator. In nervous patients the sensation of suffocation or smothering at

first is a difficulty that is overcome by a little practice, and may be due to spasm of the larynx, or to pushing the spatula in too far.

For upper bronchoscopy, however, in most cases general anesthesia is preferable, but the danger of arrest of respiration should be provided for, by having the tracheotomy instruments at hand for an immediate opening of the trachea, as it is sometimes impossible to start up the respiration again without doing this operation.

For *oesophagoscopy*, apply cocaine the same as for laryngoscopy. Examine the upper part of the oesophagus with the tubular speculum, passing it down behind the arytenoid cartilages, which lie against the posterior-pharynx, and between them appears not an opening, but a horizontal depression, into which the spatula is passed, and pulls the cricoid cartilage forward, exposing the pyriform sinus, and the upper opening of the oesophagus. The tube is passed into the oesophagus by way of the right pyriform sinus. Cocaine is sufficient to do away with pain, but does not prevent retching like a general anesthetic. Morphia helps to do this.

For *gastroscopy*, profound general anesthesia is necessary, as it is only in this way we can get rid of the retching, which causes the diaphragm to clamp the tube, which, in turn, may be dangerous with the tube in the stomach. Some cases do not take ether well, and chloroform may be substituted.

For both *oesophagoscopy* and *gastroscopy*, the stomach should be empty, and the mouth clean. No food should be allowed for at least twelve hours prior to passing the tube. Grease tube with vaseline, pass left forefinger into glosso-epiglottic fossa behind the pharyngo-epiglottic fold, and, if possible, into the right pyriform sinus. Lifting upward in the dorsal position, or forward, if sitting, the tube is passed behind the finger just behind the cricoid, which is lifted by traction on the tissues.

If there is any difficulty, the instrument may be threaded over an oesophageal-bougie, but not farther than just beyond the cricoid cartilage, as after that, it must be guided by sight with the illumination of the lamp, as otherwise, damage to possibly diseased tissues may be done.

The position of the head is all important in attempting these examinations, and a skilled assistant who understands how to hold the head properly is absolutely necessary to avoid bungling the work, and wearing out the patient. This is especially true in œsophagoscopy, as the mouth, pharynx and œsophagus must be brought into a straight line by holding the head steadily in extreme tension, with the mouth wide open. This is known as the Boyce position from its description by Dr. John W. Boyce, of Pittsburg.

It is to Dr. Boyce and Dr. Chevalier Jackson that I am indebted for my first experience in this line, by seeing their manipulations of these instruments on both dogs and human beings.

Dr. Jackson has done more than anyone else in America for the elucidation of the technique of direct laryngoscopy, bronchoscopy and œsophagoscopy, and the instruments here exhibited, are his designs. The first direct examination of the œsophagus was done by Kussmaul with a urethroscope in 1868, but Milkulicz, in 1881, was the first to do so with a satisfactory optic apparatus, which he also introduced into the stomach.

Prof. Gustave Killian, in 1897, removed a foreign body from a bronchus, and later improved on his apparatus and technique. He may be considered the first successful explorer of this field of work.

The practical value of tracheoscopy, bronchoscopy, œsophagoscopy and gastroscopy cannot be over-estimated, and to be appreciated, one must see its actual demonstration.

The examination of the trachea with the laryngeal mirror is satisfactory only in exceptional cases, whilst the bronchial tubes, œsophagus and stomach have been, to all intents and purposes, sealed books.

With these instruments, every spot in the larynx, trachea, primary bronchial tubes, œsophagus and most of the stomach can be inspected by sight with satisfactory illumination, and all changes from a normal condition studied carefully, thus enabling us to make an accurate diagnosis of conditions that heretofore were involved in obscurity.

In the larynx, trachea and bronchial tubes we can directly apply appropriate remedies to

diseased areas, such as ulcers, or perform such operations as removal of foreign bodies, scarification of edematous tissues for relief of dyspnoea, opening of abscesses, excising neoplasms, etc.

In the œsophagus we are no longer blindly groping with sounds and bougies to decide the cause of and inability to swallow, but can determine the exact pathological condition present, whether an inflammatory alteration, or ulceration, a neoplasm—benign or malignant—a constriction or dilatation, or a foreign body.

The treatment of œsophageal stricture has been entirely revolutionized by the œsophagoscope, as no surgeon is any longer justified in attempting the dilatation of a stricture until he has by direct inspection determined its cause and the condition of the surrounding structure, and whatever treatment he decides upon should be carried on by sight.

In the stomach the walls can be thoroughly examined, except at the extreme pyloric end, and the location and extent of an ulcer, or the size of a growth, or other pathological alteration of its mucosa determined, thus giving aid in diagnosis to both physician and surgeon.

Time does not admit of going into this subject in detail, but I trust these few remarks may awaken in you sufficient interest to make you look farther into it. You will not, however, find it any easy matter to learn the use of these instruments. It takes much time and patience and constant practice to become expert in their manipulation, and familiar with the normal conditions of the windpipe and gullet so as to be able to recognize any deviation therefrom.

For the practical demonstration of the use of these instruments, I will, with Dr. Dunn's assistance, give a clinic to-morrow, Thursday morning, at 9:00 o'clock in the Virginia Hospital Amphitheatre, and show both upper and lower trachea-bronchoscopy in two clinical cases, and œsophagoscopy and gastroscopy on dogs, as just at present I have no œsophageal case under treatment.

NOTE.—Dr. White, assisted by Dr. Dunn, gave a clinic at Virginia Hospital, at which he demonstrated the use of the tracheoscope and bronchoscope on patients, and the gastroscopy on dogs. Each member of the Society present was afforded an opportunity of examining the cases.

SOME REMARKS ON CORONERS AND THEIR DUTIES.*

By JOHN W. BRODNAX, M. D., Manchester, Va.
Coroner, City of Manchester; Demonstrator of Anatomy, University College of Medicine, Richmond, Va.

I appreciate the fact that the subject of which this paper treats is of little interest to the profession in general, and that it only appeals to those of you who hold the position of coroner in your respective counties or corporations. Yet, I believe the efficiency of this office can be greatly enhanced by a clearer and more definite understanding on the part of the physicians of the powers and duties pertaining to it. For it is upon the physician that the coroner relies for a notification of many cases which come within his province to inquire into, and in which an early investigation is essential for an intelligent and correct conclusion.

As regards coroners' duties, I wish only to speak of what constitute his cases, *i. e.*, what cases should be referred to him for investigation. This function is not clearly expressed in our statute books. The wording in the Code of this State is so ambiguous that the coroner, contenting himself with the knowledge obtained from that source, finds himself frequently in doubt as to whether certain cases coming under his notice should be investigated by him or not.

With a view to a better understanding of the functions of this office, and thus adding to its usefulness as a means for the prevention as well as detection of crime, I have made a careful research into the history and literature relating to the subject, and have embodied in this paper the results of the information thus obtained.

The duties of a coroner can be expressed in a general way as consisting principally of investigating all deaths of persons, whether sudden or otherwise, whose manner of taking off creates suspicion that the death might have resulted from foul or other unlawful means.

According to the *American Law Register*, the proper cases for the coroner's office are sudden deaths, violent and unnatural deaths. These are from their nature suspicious, and an inquiry into the circumstances of all such cases

should be made by the coroner, although an inquest need not necessarily be held. There is no necessity for a coroner to hold an inquest in any case that he investigates, unless this preliminary investigation reveals facts concerning the death sufficient to create in his mind a reasonable belief that it resulted from some unlawful means.

The decision of the question as to whether an inquest should be held or not is left entirely to the discretion of the coroner; and if there is nothing material to be gained by it, the coroner is not justified in putting his county or corporation to the additional expense of inquest.

As regards sudden deaths, I think it is reasonable to assume that any death occurring within twelve hours from the time the deceased was in his usual health, should be considered sudden. It is certainly unexpected and, consequently, suspicious, and the responsibility on the coroner to make inquiry into it is in no way lessened by the fact that there was a physician present just before or after the death of the person. That the attending physician is equally as capable of determining the cause of the death as the coroner is not questioned. It would be presumptuous to claim for the latter any superior knowledge in that respect over the physician; but the coroner is the proper legal authority to decide these cases; the physician is not.

The law assumes that the physician in attendance on a person dying under suspicious circumstances, may himself, in some way, be *particeps criminis* until an inquiry by the coroner exonerates him. The impropriety of the attending physician issuing the certificate of death in these cases is evidenced by an act of parliament relating to inquests, which states in part, that "if any person state on oath that in his or her belief the death of the deceased was caused partly or entirely by the improper or negligent treatment of any medical practitioner, he shall not be allowed to participate in the autopsy on the deceased, etc."

As regards violent deaths, such as murders, suicides, drownings, burnings, etc., these are all recognized as coroners' cases, and need no comment.

Regarding deaths from casualties, Dr. Lee,

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of Philadelphia, an eminent authority on coroners' laws, says, "Doubtless, in some instances, when the facts of the case are well known beforehand (and under this heading, we include the many deaths occurring without medical attention, from natural causes which the coroner is usually bound to investigate), an inquest is unnecessary. But as such, we cannot consider the large number of deaths occurring from casualties which it is also the coroner's duty to inquire into, in many cases it being absolutely necessary that there should be such an inquiry instituted as soon as possible after the death of the party, and when a death has been the result of the negligence, either real or apparent, of any firm, company or corporation, the interest of the victim's family, or of his employers seem to render such an investigation an imperative necessity."

In the case of *Lancaster county v. Dern Long, J. C. P.*, the court held "That when death occurs from any violence done to a person by another, although such violence may not immediately kill the party injured, it is still the duty of the coroner to hold an inquest." This opinion having been taken to the Supreme Court upon a writ of error, that tribunal approved it.

From this, it would seem that the coroner should investigate all cases of accidental injuries, even when the deceased has not died immediately, but lived several days, and then died from some complication brought on by the injury. For the importance of an investigation is as great then as it would have been had the deceased been killed outright.

Under the head of unnatural deaths, I would include those persons who, in their last illness, were unattended by a physician, or in which the physician has not seen the deceased within two weeks prior to the latter's death.

Still-births and abortions of unmarried women, and deaths of infants of unmarried women, occurring within a few days after their birth, are pre-eminently coroners' cases, for in these there is a strong suspicion of crime. It is natural to suspect the woman or some interested party guilty of destroying offspring born out of wedlock. A coroner has a right to and should insist that all such cases be brought to his notice, and not leave it to the discre-

tional judgment of the physician who may have been in attendance as to whether he should be notified.

Deaths occurring in prisons are also coroners' cases, for it may be presumed that the prisoner possibly died as a result of ill usage on the part of the jailer.

Summing up: the following deaths may be said to be properly in keeping with the law for the coroner to investigate; and in which to hold inquests, if, in his discretion, he sees fit:

All sudden deaths, whether violent or otherwise.

All violent deaths, whether deaths occur immediately, or the deceased has survived for some days.

All suspicious or unnatural deaths from whatever cause, such as poisonings, drownings, murders, suicides, burnings, still-births of unmarried women, and deaths of infants of unmarried women occurring within a few days after their birth.

Deaths where there has been no attending physician.

Deaths in prison.

In conclusion, I wish to make a few remarks concerning the coroner himself—the requisite qualities he should possess in order to administer in a proper manner the functions of his highly important office. *The American Law Review* says on this subject: "The grave and important powers lodged in the hands of a coroner, combining in his person the function of a medical expert and a judge, is sufficient warrant for a careful selection for the filling of such an office."

A coroner should be a person of high standing in the community. He should be a competent physician who, by an intelligent examination would, in most cases, be able to decide that the death was natural, and no further examination needful. His knowledge should embrace both the legal and the medical aspects of his office. In order to do justice to his position, he should be well informed on such branches of medicine as are necessary for the conduction of a thorough and scientific legal examination and autopsy. A good knowledge of anatomy, physiology and pathology is essential.

The average medical man has no special fitness for the conduction of a medico-legal examination. He who in the sick room may be a skillful diagnostician or brilliant operator is, unless he has had previous experience, very likely to make a dismal failure when called upon to perform an autopsy. Finally, for the reason that forensic medicine is best learned by experience, the coroner should be selected with a view to his fitness for the office; and his appointment should be permanent in order that the public may have the benefit of the experience of a long tenure of office.

DIAGNOSIS AND MANAGEMENT OF OCCIPITO-POSTERIOR POSITION.*

By JOHN W. WINSTON, M. D., Norfolk, Va.

Occipito-posterior cases are easy to conduct if done properly, but if not made out and managed in the right way, are often productive in causing the mother much pain, prolonging the labor, and may even injure or cause the death of the child. We are all familiar with the signs that lead to the diagnosis of this position; and it is, therefore, not these signs that I want to point out as much as the fact that we should use great care to find out the exact position of the child in every case of labor. The exact amount of flexion of the child's head and the dimensions and shape of the maternal pelvis should also be ascertained with care.

The heart tones, when heard low down and far to the side of the abdominal wall, make us at once suspect a posterior position of the occiput. The shoulder away from the midline and the cephalic prominence strengthens this diagnosis; while the position of the fontanelles examined per vaginam will generally confirm the diagnosis, but if there should still be doubt, the finger can be passed through the cervical canal and the ears, and often the eyes, nose and mouth can be made out. With the careful obstetrician none of these procedures are in the least dangerous, and can be used at will. Therefore, in all our cases let us never overlook the occipito-posterior at the beginning.

Statistics place the percentage of occipito-posterior positions low, but in a series of 200

cases conducted by myself, I have found it to be present in at least twenty-five per cent., and I can truthfully say that the early recognition of this position has resulted in most every instance in greater comfort to the mother and in a much shorter labor.

The traction of the upper segment of the uterus over the bag of waters and the cervical position usually bring about the softening and dilatation of the cervix before the waters are ruptured; but the action of the engaging head, I think, even before the membranes rupture, plays a more important part than is generally accredited to it, and it is the study of posterior positions that shows the importance. So often we see, in such positions when the head is not flexed properly, with active and steady pains, that the cervix does not dilate, even though labor has been active for a good many hours. By simply flexing the head the canal dilates much faster. It is also often the case that the cervix will become very soft with scarcely no dilatation. With such cervixes considerable progress is made by dilating the soft cervix with the fingers.

We are told in text-books that most of our posterior positions readily rotate, but this is by no means true. It is better to say that in order for them to be the most easily delivered and the quicker, they will have to rotate; and this narrows the management of occipito-posterior cases down to the fact, that we have to help nature to rotate them. If the head has to be rotated there can be no gain in postponing this procedure, after the canal of exit is in readiness.

By placing the woman on the side to which the occiput points, the rotation is facilitated. Keeping the head flexed is of great importance, because it will only rotate when it strikes the pelvic floor; this is the most advantageous position, which fact is easily seen by placing the head in this position within a dried pelvis. After the cervix is softened and dilated to the full extent, there can be no objection to rupturing the membranes; indeed, it is often of great advantage, for the reason, that with these positions, at this point, often no progress will be made for hours, as the head in most cases will not engage in this position until the membranes are ruptured. After the bag of waters

*Read before the Norfolk Medical Research and Observation Society.

is opened, it should be seen that the head is at once flexed, for the lack of flexion then not only hinders rotation of itself, but when the head stays unflexed for any length of time, the caput forms in a position that is not advantageous to rotation. The lack of such a procedure allows the contractions to continue, but the progress may come almost to a standstill.

It is sometimes necessary to stop the contractions and progress of labor for a time; but whenever the expelling force is at work, the progress must not come to a standstill, for it means a loss of energy.

With one hand in the vagina and one on the abdomen we can bring the occiput around to an anterior position, but in all the cases I have tried, the head rotates back from where it was moved. Some advise bipolar version, but this procedure should not be done except as a last resort, for breach deliveries are not as safe as cephalic after the occiput is to the front.

If the head is kept well flexed by the finger in the vagina from the time it strikes the pelvic floor until it is well down in the pelvis, nature will generally do the rotating without any trouble, in the normal pelvis. Of course, if the pelvis has not the natural shape and size, allowances will have to be made accordingly. In few cases, if the above is carried out, will the case call for forceps, and labor will not be much longer than in the normal occipito-anterior positions. In cases where the energy of the uterus has been spent, axis traction forceps can be applied high, after changing the head so that it will be well flexed in their grasp, and gentle and steady traction will generally bring about rotation and delivery. They can be kept on until the head is delivered or taken off after well drawn in the pelvic. When it becomes necessary to apply them, it is best to deliver while under anesthesia. Unless the head is rotated before applying them, they, of course, have to be re-applied.

Most axis traction forceps are heavy and clumsy, and will cause more tear than thin forceps, and because they have to be generally re-applied constitutes an objection to them.

Personally, when it becomes necessary to apply forceps, I prefer the thin blade French forceps, applying them after the head has been

turned (rotated) with the hand in the uterus, and while the head is still held with the hand, for on removal of the hand, the head will generally slip back around to the posterior position.

When the cervix is dilated well, and the head does not rotate readily by keeping it flexed, it is my rule to put on forceps and deliver at once, for by this procedure we cause no tears, and spare the woman fatigue, worry and pain, and the obstetrician time.

PERFORATING WOUNDS OF THE UTERUS, INFLECTED DURING THE COURSE OF INTRA-UTERINE INSTRUMENTATION.

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- A. GENERAL CONSIDERATIONS AS TO THE NATURE; AS TO THE CAUSES; PREDISPOSING; EXCITING.
- B. AN ANALYSIS OF ALL THE CASES PUBLISHED IN THE AMERICAN, ENGLISH, FRENCH, AND GERMAN LITERATURE FROM 1895 TO 1907, INCLUSIVE.*
- C. CONCLUSIONS.

(Concluded from Last Issue.)

Chief amongst the pathological states that predispose to the occurrence of perforating wounds of the uterus are the following:

(a) The changes (hyperemia, softening, etc.,) present in menstruating, in pregnant, in puerperal and in post-abortion uteri. Perforation is favored by the peculiar state of the muscular tissue of the puerperal uterus. In curetting congested, softened uteri, such as are met after abortion and after childbirth, no attempt should be made to elicit the uterine "cry" (le cri uterin) (61), that is, the peculiar creaking noise, due to the forcible scraping of the uterine wall by the curette. In these cases, owing to the softness and friability of the uterine wall, this sound is not obtainable.

Perusal of the reported cases, the bibliography of which appears at the close of this article, discloses that 14 puerperal uteri were perforated, 7 deaths resulting; that either in the

*All the literature to which I have had access. The figures and letters included in () refer to corresponding figures, etc., in the References appended to this article, which article is concluded with this issue.

attempts at abortion, or in efforts to overcome some of the accidents following on an abortion, sixty-five uteri were perforated, 25 deaths resulting. After delivery at term, the thickness of the muscular wall, according to Tarnier, is from 2 to 5 mm. (62).

(b) Atrophy of the uterus (63). All the different forms of uterine atrophy, of themselves cause a weakening of the uterine wall, and therefore can be looked upon as conditions predisposing to uterine perforation. Atrophy of the uterus has been observed in some chronic diseases: as in pulmonary tuberculosis, occasionally in diabetes, in leukemia, in chlorosis, in pernicious anemia, in Addison's disease, in Basedow's disease etc. It is stated that also in certain acute infectious diseases, such as typhoid fever, a marked atrophy of the muscular tissues is noted.*

We will enumerate the main histo-anatomical changes that have been noticed in senile atrophy of the uterus, and those found by Emil Ries (Chicago) in some cases of marked atrophy following puerperal infection.

The changes found in senile uteri are:

(a) Atrophy of the mucosa and of the muscle fibres.

(b) The relation, in amount, normally existing between the connective tissue and the muscular tissue is altered considerably at the expense of the latter.

(c) Vessels are sclerosed. Case 33 was a senile uterus. It was also the seat of myomata.

Emil Ries, Chicago, in some cases of extensive atrophy of the uterus, following puerperal infections, found:

(a) Absence of mucosa.

(b) Hyaline degeneration and thrombosis of the vessels.

(c) Degeneration and necrosis of the muscularis.

Malignant neoplastic diseases of the uterus are numerous. The cases of a carcinoma or a sarcoma of the uterus, in which perforation of the uterus has resulted from slight mechanical stress, are numerous. Efforts in the presence of malignant disease of the uterus to obtain material for microscopic examinations, if brutal, may prove disastrous. Malignant disease

of the uterus may give rise to spontaneous perforations (65).

(d) Inflammatory processes of the uterine tissues may be localized; may be diffuse. Like inflammatory processes elsewhere, they are destructive in nature. Whatever be the nature of the inflammation, acute or chronic, or of the site, be it located in the mucosa, in the muscularis or in the connective tissues, it invariably weakens the resistance of the uterine wall. Case 66 was a case of myometritis edematosa; case 67 a case of endometritis fungosa. In case 68 sutures from a previous operation, were suppurating their way through the uterine wall.

Prolonged septic processes predispose to uterine perforation. Tubercular uterine inflammation by leading to abscess, to cavity formation, can of itself cause uterine perforation.

Inflammation of the uterus may terminate in resolution, in ulceration, in suppuration, or in gangrene. We will briefly consider abscess (69 *a, b, c, d*) of the uterus, and also gangrene of this organ, as several instances will be found in our tables, where these conditions, either together, or separately, were present. The occurrence of abscess of the uterus is no longer contested, as many of the cases reported have been amply verified (70 *a, b, c*). Uterine abscesses may be acute, subacute, or chronic; may be primary or secondary; in the primary form, the pus collection has its starting point as such in the uterine tissues; in the secondary form, the suppurative process starts in neighboring tissues and invades the uterus by extension through contiguity of tissues. In the first form, at the beginning, if not throughout its entire course, the pus collection is entirely circumscribed by uterine tissue; in the secondary form, it is partly surrounded by the uterine tissue, partly by other tissue.

In number, these abscesses may be single, may be multiple. In location, they are either submucous, intra-muscular or interstitial, or sub-peritoneal. Their site may be in the anterior wall (70 *c*); may be in the posterior wall (70 *b*). Uterine abscesses are always due to infection; a pathological, surgical, or traumatic solution of surface continuity of the uterine mucosa serving most frequently as the portal of infection. Any pyogenic organism, facultatively or habitually so, can be the causative germ. Tubercular abscesses may have been reported. In Menge's case (69 *b*) gonococci were

*There are other unusual pathological states of the muscular uterine wall that predispose to perforation, such as for instance existed in Halban's case (64) and in others. Lack of space forbids us to discuss them here.

detected in the pus. Nevertheless, the ordinary pyogenic cocci are the most frequent offenders. The germs are either implanted in the uterine tissues by a vulnerating instrument, or may be conveyed to the site of abscess development by the lymphatic vessels. Rarely the abscess is embolic. The abscess may be secondary by contiguity of tissues to an infective uterine thrombo-phlebitis (infective thrombo-phlebitis, suppurative peri-thrombo-phlebitis, abscess). The liability to the latter (septic thrombo-phlebitis) occurrence during the post-abortion period is well known.

All uterine abscesses impair the solidity of the uterine wall. They predispose to traumatic perforations, as the abscess site forms a circumscribed area of lessened resistance. They may rupture spontaneously into the rectum (Bird's case, Schroeder's case); into the bladder, (Berrut's); into the uterine cavity; into the peritoneal cavity, etc. They may give rise to spontaneous perforations, as when the abscess ruptures both into the uterine cavity and into an adjacent cavity or space. We have in the case reported by Porak (70 a) an instance of spontaneous uterine perforation due to an abscess. This was a case of puerperal sepsis. The uterus contained several abscesses, one of which had ruptured both into the uterine and into the peritoneal cavities. In one of Moulclaire's cases (71) at the seat of perforation, there was an abscess, which extended nearly to the peritoneal coat.

Another possible termination of uterine inflammation, which predisposes to perforation, is gangrene. Uterine gangrene may be circumscribed, may be general, may involve the entire thickness of the uterine wall, may only involve a part of its thickness; may be due to traumatic, inflammatory, neoplastic, or to chemical causes. It may be secondary to criminal or other intra-uterine maneuvers; it may be spontaneous. Gottschalk (28) reports a case of gangrene of the uterus (puerperal sepsis) in which the necrotic tissue represented the whole uterine mucous membrane and a portion of the muscular walls. He thinks that in this case the gangrene was due to intra-uterine injections of 60 per cent. alcohol. Cases of gangrene, due to contact of caustics with the uterine wall, are reported.

Gangrenous metritis, is a condition which predisposes to traumatic uterine perforation;

which may result in spontaneous perforation, Beckman, St. Petersburg, noted this grave complication six times in forty cases of metritis dissecans. Metritis dissecans is the condition which we now designate as gangrenæ uteri puerperalis. It may be partial, it may be total, it may be perforating.

On examining the organ, it is at times difficult to determine if the perforation is secondary to the gangrene, or, if the gangrene is secondary to an inflammation, started by an instrument which has penetrated the uterine wall (73). In Winter's case (74) the gangrene was secondary to a perforation. It was located on the posterior wall; there was a marked predominance of saprophytic germs. The inflammatory gangrene enlarges the traumatic lesion and may lead one to think, that the perforation is spontaneous in origin. Maygrier (75) reports two cases of post-abortion gangrene. Each had led to a uterine perforation. Trauma as a factor was absent in both. K. Schmidlechner reports a case of gangrenæ uteri puerperalis, involving the entire cervical wall and the lower half of the muscular wall of the body of the uterus.

CONCLUSIONS.

1. Pseudo-perforation of the uterus, though of exceptional occurrence, is a condition that occasionally confronts the surgeon.
2. Spontaneous perforations of the uterus, due to pre-existing pathological conditions of this organ, can and do occur.
3. Perforating wounds of the uterus, be they intra-peritoneal, be they extra-peritoneal, have a mortality. This morbidity, this mortality, increases in direct ratio with the inexperience, the carelessness, the surgical uncleanness of the operator. The expert recognizes at once the making of a false passage and institutes proper treatment. High surgical skill may convert (as a consultation of the articles enumerated at the close of this article amply demonstrates) an apparently hopeless case into a recovery. In the 154 reported cases, there were 42 deaths, 108 recoveries. The result is not stated in four cases. Expectant treatment was pursued in 66 cases. There were 21 deaths in this series. Laparotomy, including what intra-abdominal repair work appeared necessary to the operator, was performed 72 times. There were 52 recoveries, 17 deaths, and 3 unstated

results in this series. Vaginal hysterectomy was done 15 times. There resulted 10 recoveries, 4 deaths, and one result not stated.

4. Dilatation of the cervical canal, and instrumental curettage of the uterine cavity are, owing to their associated dangers, not office operations. During the performance of either of these two apparently danger-free operations, the operator may be confronted by accidents, the meeting of which requires the highest surgical skill. In their performance, if an anesthetist be available, the employment of general anesthesia (in the absence of contra-indications) is highly desirable; in fact, the rule should be:

(a) No uterine curettage without general surgical anesthesia. It is easy to conceive how an unanesthetized patient can, by injudicious jerks or movements, perforate her own uterus, by impaling it, by spiking it upon the intra-uterine instrument. Anesthesia permits the operator to depress the abdominal wall, to locate, to fix, if necessary, the fundus uteri.

(b) No curettage without ample cervical dilatation. A non-dilated cervical canal interferes with the tactile sense, and thereby with the proper maneuvering of intra-uterine instruments. Steady the cervix, before beginning the dilatation of the canal.

5. Intra-uterine instrumental maneuvers should only be attempted by those:

(a) Who are thoroughly conversant with modern surgical asepsis and antisepsis. The absence of bacteria on the perforating instrument minimizes very much the dangers of perforation. Infection has immediate, has late dangers. In an uncomplicated perforating wound of the uterus, the traumatism of the uterus plays but a secondary role; the pre-existence, or the implantation, at the time or subsequently, of infection commands the situation.

(b) Who are capable of recognizing malpositions of the uterus as well as pathological conditions of that and of neighboring organs. Even the bringing of the cervix to the vulva and outlet may disturb peritoneal adhesions, may rupture pus pockets.

(c) Who are acquainted with the dangers incident to the successive steps of the intra-uterine operation, which they are performing. The steel dilator is an instrument of too much power, and the curette is too dangerous a weapon to be used by the novice, by the inexperienced.

6. Once the uterus is perforated, all further instrumentation must be suspended. If it be imperative that the contents of the uterine cavity be removed, this must be done by digital curettage, or it may be done with a curette, whilst the uterus is being watched from above, through a laparotomy incision.

7. A perforated uterus should never be mopped or swabbed with caustics or irritating antiseptics. It is needless, it is dangerous. In two cases (38, 77), it is distinctly stated that the uterine cavity was swabbed. Both cases died. In each case, carbolic acid was the agent used.

8. A perforated uterus should never be irrigated. In seventeen cases in which it is stated that the uterus was irrigated during the course of perforation or afterwards, there were 6 recoveries (cases 17, 49, 37, 78) and 11 deaths, (cases 22, 47, 63, 80, 81, 82, 83). In two of the recoveries (cases 39 and 57) convalescence was delayed by mercurial poisoning, due to the sublimate solution, that had been used for uterine irrigation. In case 78, one ounce of a one per cent. aqueous solution of creolin entered the peritoneal cavity. Brothers, in his report of case 22, in which the perforated uterus was irrigated, states: "I have never seen a case of greater physical suffering in my life." The great danger attending intra-uterine irrigation in these cases is the conveyance, the diffusion by the irrigating fluid of septic material from the uterine into the peritoneal cavity or other space. Owing to the great absorptive power of the peritoneum, the danger of chemical intoxication is also present. Every case, in which it is definitely stated that the perforated uterus was not irrigated, recovered (10 a, 12 c, 19, 22, 29, 31, 33, 47, 67; 71; 85; 86 a).

9. Vaginal hysterectomy is an operation not to be performed in the treatment of perforating wounds of the uterus. It calls:

(1) For the sacrifice of an organ which may not be perforated.

(2) For the sacrifice of an organ, which though perforated, most always can, with little difficulty to the operator, and with much advantage to the patient, be saved.

(3) It does not enable the operator to either exactly determine the presence or absence of other co-existing intra-abdominal vascular visceral or other lesions, nor does it enable him to repair them.

If the perforated wound has been inflicted

upon a non-septic uterus during the course of an aseptic intra-uterine maneuver, in the absence of complicating abdominal lesions, recovery is the rule.

10. The treatment of perforating wounds of the uterus is determined largely by the following conditions:

(1) The septicity of the uterus and its contents.

(2) The septicity or asepticity of the perforating instrument.

(3) The presence or absence of co-existing vascular, omental or intestinal lesions.

(4) The size and the number of the perforations. A piece of omentum may prolapse through a large rent. A coil of gut may become incarcerated or strangulated in a large perforation.

11. Treatment:

(a) If the uterus be non-septic, if the perforating instrument be aseptic, and if it can also be reasonably assumed that there is an absence of omental or intestinal or important vascular lesions, the treatment to be followed is one of "armed expectancy." The patient must be confined to bed, and immobilization enjoined for at least three days. The patient's pulse, temperature, facies and abdomen must be carefully watched. A suppurative cellulitis, signs of internal hemorrhage, etc., call for intervention. A wick of gauze may be inserted into the uterus, but it should not be introduced much beyond the internal os.

(b) In all cases in which there has been a prolapse of the omentum, or of intestines into the uterine cavity; in all cases in which associated injuries to the intestines or omentum co-exist, or in which there are reasons to fear a significant internal hemorrhage, laparotomy is urgent.

(c) Once the abdominal wall has been opened, the visceral lesion must be repaired. The uterine puncture, if small, need not be sutured. If large (when the perforation is large you cannot depend upon the contractility of the uterine muscle, to entirely occlude it) if of the nature of a tear, of a laceration, it is better that it be sutured. One or two layers of sutures may be used. Whether small or large, if the perforation be the seat of hemorrhage, suturing is indicated. In the following cases, the operators deemed it wise to suture the perfora-

tion: Cases 10 *a*, 14 *c*, 20, 22, 31, 47, 50, 84, 87 88 89 *a* 89 *b*.

All these cases recovered, excepting cases 10 *a*, 20 and 89 *a*. Complicating intestinal lesions, necessitating resection of gut and enterorrhaphy were present in each of these three fatal cases. Some operators as Jarman (case 84) made use of both superficial and deep sutures. Some clinicians teach that every perforating wound of the uterus calls for a laparotomy. They base their teaching upon the following considerations:

(a) That the exact size of the perforations is not known.

(b) That hemorrhage may be taking place from the peritoneal surface of the wound.

(c) That in the absence of a laparotomy one can never tell with certainty whether any intra-abdominal organ is injured.

12. A healed perforation of the uterus apparently does not interfere with the normal development and the normal termination of a subsequent pregnancy.

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Book Notices.

Manual of Obstetrical Technique, as Applied to Private Practice, with a Chapter on Abortion, Premature Labor and Curettage. By JOSEPH BROWN COOKE, M. D., Adjunct Professor of Obstetrics, New York Polyclinic Medical School and Hospital, etc. Illustrated. Sixth edition, enlarged and fully revised. Philadelphia and London. J. B. Lippincott Co., 1908. 12mo. 258 pages. Cloth.

There must be merit in a book which has reached its sixth edition in eight years; and we find this merit to consist in the plain descriptions of signs and procedures, aided by a profusion of bedside illustrations. It is the practical application of principles—from the diagnosis of pregnancy throughout the technique of labor at every stage—whether manual or instrumental. The book tells the obstetrician what to look for, what to do, and how to do it, in such a manner that the reader feels that he himself was assisting in the delivery. The added chapter in this edition on Abortion, Premature Labor and Curettage is an excellent and constantly serviceable one.

Exploits of a Physician Detective. By GEORGE F. BUTLER, M. D., Professor and Head of Department of Therapeutics, and Professor of Clinical Medicine, Chicago College of Medicine and Surgery, Chicago Clinic Publishing Co. 1908. 12mo. 322 pages. Cloth.

This book is an attempt at the application of

the principles of hypnotism, etc., for the purposes of securing confessions of crime, etc. Some of its pages read like chapters from "Wild Western Scenes," and is not a book to be recommended for perusal by the highly impressionable. The book reads as if it were the records of actual cases; but in most instances, the pictures are over-drawn, and thus render the book impracticable in its purpose. And yet the strongly impressionable nature of some may be injuriously affected by its reading. As a book, it is wanting in synoptical contents, nor is there an index, nor a preface as explanatory of the objects of the volume.

Lectures on Principles of Surgery. By STUART MCGUIRE, M. D., Professor of Principles of Surgery and Clinical Surgery, University College of Medicine, Richmond, Va. Baltimore: Southern Medical Publishing Co. 1908. 8vo. 480 pages. Cloth, \$4.00; half Morocco, \$5.25.

These fifty lectures appeared originally in regular order in this journal and proved to be both instructive and popular. The author has revised these lectures wherever necessary, and complying with earnest requests now presents them in book form for student and practitioner. The book covers the whole subject of Principles of Surgery, and is written in the peculiar style of the author, which makes it easy, engaging reading, while it imparts instruction—line upon line and page by page. We are glad to learn that it has been adopted as the text book on Principles of Surgery in several of the colleges of the country, with indications that it will be adopted hereafter by other medical colleges. It is a book of great value to the general practitioner of surgery, and the physician will find in its pages many suggestions of constant use to him.

Diagnostic Urinalysis. By M. D. HOGE, Jr., M. D., Professor of Clinical Diagnosis, University College of Medicine, Richmond. 8vo. 93 pages.

The Editor of this Journal notes with high appreciation the dedication of the book to him. While intended by the author as a class-room book for college students, the first edition established for itself a high place in the esteem of practitioners generally. Indeed, many speak of it as the very best of practical manuals for

office work and even as the laboratory guide book for specialists in urinalysis. There is no "padding" about it. It tells how to examine the urine, what to look for, and gives the meanings of what is found on urinalysis. The simplest of formulæ that are reliable are selected for daily use. The pages have broad margins for notes, etc.

Cure of Rupture by Paraffin Injections. By CHAS. C. MILLER, M. D. Published by the author. 70 State Street, Chicago, Ill. 1908. 12mo. 81 pages. \$1.00.

This little book deals with a condition of constant interest. It comprises a description of the method of injecting paraffin for the cure of hernias. The simplicity of the technic does not require the special services of the expert surgeon; for even the properly informed general practitioner can as safely undertake to use the method. The book describes every detail of procedure, and points out its advantages from an economic point of view. The operation is practically painless, and the results have thus far been generally good. The book is worth buying and reading, and the technic is worth adopting in the great majority of cases as first diagnosed by the family physician.

Anatomy—Descriptive and Surgical. By HENRY GRAY, F. R. S. Seventeenth edition—thoroughly revised and re-edited, with additions. By JOHN CHALMERS DA COSTA, M. D., Professor of the Principles of Surgery, and of Clinical Surgery, Jefferson Medical College, Philadelphia, and EDWARD ANTHONY SPITZKA, M. D., Professor of General Anatomy, Jefferson Medical College. Illustrated with 1,140 engravings. Lea & Febiger. Philadelphia and New York. 1908. Imperial 8vo. 1,614 pages. Cloth, \$6.00 net; leather, \$7.00 net.

"Gray's Anatomy" has become so established as the standard text-book for students and reference book for practitioners that the statement that this last and well revised edition is just from press should serve as a sufficient advertisement. While the original author is no longer with us, the excellence of his work was so conspicuous as to bring forth from time to time—both in England and in this country—willing editors of successive editions—each of whom has contributed at least a mite to the perfection of a book that seemed from the first to be almost perfect. The excellence of descriptive text and the direct printing of names on the parts described are among the attractions which sustain the standard character of the work.

"Gray's Anatomy" is practically known the world over.

Consumption—How to Prevent It, and How to Live With It. By N. S. DAVIS, A. M., M. D., Professor of Principles and Practice of Medicine, Northwestern University Medical School, etc. Second edition. Thoroughly revised. Philadelphia. F. A. Davis Co. 1908. Cloth. 12mo. 172 pages. \$1.00 net.

This is a *thoroughly revised* edition—each of the chapters showing additions, in keeping with the more advanced doctrines of the times. It treats of the nature of consumption, its causes, prevention, and the mode of life, climate, exercise, food, clothing, etc., necessary for its cure. One of the new chapters in this second edition insists on the establishment of proper sanatoria for the tuberculous, and points out even the probabilities of cure, if early admission is made of such cases. Each chapter, indeed, contains practical, useful suggestions, both for the patient and the physician. The concluding chapter is on medical treatment.

Diseases of the Skin. By A. H. OHMANN-DUMESNIL, A. M., M. E., M. D., Ph. D., etc., formerly Professor of Dermatology and Syphilology, St. Louis College for Medical Practitioners, etc. Third edition. Thoroughly revised and enlarged. 140 original illustrations. St. Louis. C. V. Mosby Medical Book and Publishing Co. 1908. 8vo. 606 pages. Cloth, \$4.00.

The author's vast experience in the specialty of Dermatology has led him to know what is known about skin diseases, as usually met with in this country. His book deals with these diseases in a clearly descriptive manner, and is rich in diagnostic points as to diseases that have certain like signs and symptoms. While a good college text-book, it is especially valuable to the general run of practitioners who have to deal with skin diseases. The sections on treatment refer to the best of preparations that may usually be found in any up-to-date pharmacy. Formulæ of useful combinations are plentiful. The illustrations throughout the book—many of them new and graphic—are well chosen for the purposes of showing the appearance of different diseases of the skin.

Ready-Reference Handbook of Diseases of the Skin. By GEORGE THOMAS JACKSON, M. D., Professor of Dermatology, College of Physicians and Surgeons, New York, etc. With 92 illustrations and 4 plates. Sixth edition, thoroughly revised.

Lea & Febiger. New York and Philadelphia. Small 8vo. 737 pages. Cloth, \$3.00 net.

The marks of revision of this popular hand-book are evident in many sections. Additions of diseases for the first time considered increase the number of pages, and the introduction of new illustrations help wonderfully to give a real clinical caste to the book. About fifty pages are taken up with *general* considerations—referring to skin anatomy and physiology, points of diagnosis as relating to lesions and other elements of diagnosis, therapeutic notes, and classification of diseases. Then follows an alphabetically arranged consideration of the dermatoses—the book concluding with an Appendix filled with prescription formulæ, etc. While what is said under the heading of each disease is good and practical, we cannot think the alphabetical arrangement is the best for either student or practitioner. The Index, however, is full and helpful.

Cataract Extraction. Edited by J. HERBERT CLAIRBORNE, M. D., Instructor in Ophthalmology, Cornell University, etc. New York. William Wood & Co. 1908. 8vo. 169 pages. Cloth, \$2.00 net.

This book contains a symposium on cataract extraction, with discussions and comments of the several papers, read before the Ophthalmological Section of the New York Academy of Medicine, 1907-1908. It consists of thirteen chapters by twelve distinguished and selected ophthalmologists because of their special fitness for their respective parts, and covers every phase of the subject. It is a book which will prove eminently serviceable to specialists in eye diseases. Each paper is followed by notes of discussion of the same, with additions by the author, who himself contributes two of the thirteen papers of the symposium. While the titles of the chapters give synopses of the subjects discussed, the addition of an Index would have proved serviceable to the make-up of the book.

Principles and Practice of Gynecology. By E. C. DUDLEY, A. M., M. D., Professor of Gynecology, Northwestern University Medical School, etc. Fifth edition, revised and enlarged. With 431 illustrations, and 20 full-page plates in colors and monochrome. Lea & Febiger. Philadelphia and New York. 1908. Large 8vo. 806 pages. Cloth, \$5.00 net; leather, \$6.00 net; half-Morocco, \$6.50 net.

The simple announcement that a thoroughly revised and enlarged edition of "Dudley's Gy-

necology" has been issued will no doubt alone prove the demand for the book. The arrangement of subjects is based on their causation—inflammations being grouped in one section; tumors in another, etc. The book has stood all the severe tests for usefulness in this progressive age, and is still wanted as the text-book for colleges, and by practitioners—medical and surgical. This latest edition contains much new and valuable matter in text and in illustrations. The book is especially useful as a guide to diagnosis; and the completeness of the sections on treatment will prove useful to all. Its twenty-eight double-column pages of Index, in addition to the five pages of Contents, furnish ready reference to a subject easy. It is a *standard* work on Gynecology in every respect.

Principles of Pathology. By J. GEORGE ADAMI, M. A., M. D., LL. D., F. R. S., Professor of Pathology, McGill University, Montreal, etc. Vol. I. **General Pathology.** With 322 engravings and 16 plates. Philadelphia and New York. Lea & Febiger. 1908. 8vo. 948 pages. Cloth, \$6.00 net.

Adami's *Pathology* is being issued in two large volumes, nicely printed and bound, and profusely illustrated. The volume on *General Pathology* is now published, soon to be followed by Volume II, on *Systemic* (including *Special*) Pathology. Estimating the second by the contents of the first volume, the two combined will form a practically complete library on pathology. The facts in this first volume are, for the most part, originally brought out, or confirmed by personal examinations and studies of the author. Pathology is fast becoming one of the developed branches of medical study. While the book is perhaps too voluminous for a classroom text-book, it serves admirably as the laboratory reference work; or as the standard reference work on pathology for the general practitioner whether surgeon or physician.

The Baby—Its Care and Development. By LE GRAND KERR, M. D., Professor of Diseases of Children, Brooklyn Post-Graduate Medical School, etc. Illustrated. Brooklyn, N. Y. Albert T. Huntington. 1908. 12mo. 150 pages. Cloth, \$1.00 net.

This is a good practical advice book for the guidance of mothers in caring for their children up to two or more years of age. In fact, it tells her what to do in preparation for the birth of the baby, and how to conduct the hygienic management of the child—first by weeks,

and then by months, etc. A great deal of odds and ends of practical information is given in non-technical language, relating to the nursery, clothing, sleep, dietary, etc., etc. The book would also serve well if properly studied by nurses. It is well indexed and has a number of fly leaves on which to record increasing weight, infant's illnesses, and other memoranda.

Text-Book of Human Physiology. By GEORGE V. N. DEARBORN, A. M., Ph. D., M. D., Professor of Physiology, Medical and Dental Schools, Tuft's College, Boston, etc. Illustrated with 300 engravings and 9 plates. Lea & Febiger. Philadelphia and New York. 1908. 8vo. 550 pages. Cloth. \$3.75 net.

This text-book on theoretic and practical physiology was prepared primarily for medical and dental students and practitioners. It gives special prominence to the more and more insistent demands of the mental process. The book begins by assuming that the beginner knows nothing of physiology, and, in the simplest, plainest way, gives the student a start, and gradually guides him through a study of the more complex and intricate subjects connected with functions of organs, tissues, etc. The author has attempted to teach much in the fewest possible words—the book being remarkably free of repetitions. A good Index is appended.

Pathogenic Micro-Organisms, Including Bacteria and Protozoa. By WILLIAM HALLOCK PARK, M. D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, etc. Assisted by ANNA W. WILLIAMS, M. D., Pathologist to New York Infirmary for Women and Children, etc. Third edition, enlarged and thoroughly revised. With 176 engravings and 5 full-page plates. Lea & Febiger, New York and Philadelphia. 1908. 8vo. 642 pages. Cloth. \$3.75 net.

There are many who look upon the works of laboratory investigation simply as books to be examined, like the dictionary. But this book before us, while dealing in the minute details of laboratory research and abounding in information, is so written as to afford really pleasing reading. The work includes as its title indicates description of both the vegetable pathogenic bacteria as also disease bearing protozoa or animalculæ; tells how they enter the body and the poisonous nature of their products therein developed resulting in the specific diseases, such as tuberculosis, tetanus, typhoid, etc., It is, indeed, a practical manual for stud-

ents, practitioners and health officers. Beside the well arranged table of contents of forty-seven chapters, the 14 pages of double columns of index help ready reference. A Glossary of names recently introduced by laboratory scientists—some of which have not yet appeared in the standard dictionaries—is appended.

Eclectic Practice in Diseases of Children. By WILLIAM NELSON MUNDY, M. D., Professor of Pediatrics, Eclectic Medical Institute, Cincinnati, etc. Second edition, revised, re-written and enlarged. Cincinnati. Scudder Brothers Co. 1908. 8vo. 512 pages. Cloth. \$3.00.

This is perhaps the representative authority of the Eclectic school on pediatrics. It is interesting to note the great confidence shown in drug administration—selected, of course, principally from the vegetable kingdom. True, for instance, after enumerating a list of remedies for diphtheria, the author adds that "the advent of antitoxin has revolutionized the treatment" of this disease; but fails to describe how to administer it, etc. For the physician remote from laboratories to assist in diagnosis, this book describes diseases as seen at the bedside; and tells of medicines good for the symptoms presenting. The objection to the book is that in its attempts to be concise in description, it is too vague. For instance, the whole subject of spinal curvatures, including Pott's disease, is covered by scarcely more than four pages of text—including etiology, pathology, symptoms, diagnosis, prognosis and treatment. Yet for the practitioner who has to depend upon a book for his findings at the bedside, by signs and symptoms alone, it is a good book.

Fourth Annual Report of the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis. February 1, 1906 to February 1, 1907. Edited by JOSEPH WALSH, A. M., M. D. Published by the Henry Phipps Institute, Philadelphia. 1908. Pamphlet. 8vo. 430 pages.

It is inexcusable in this day to issue a book worth examination and study in the form of uncut pages. It reminds one of the fellow who even yet prefers the slow old two-horse bus to the electric car. It is neither stylish nor useful to issue so valuable "an account of the general and special clinical and pathological work done by members of the staff at the Institute" in such an annoying form for the reader. It has taken an unusually long period, also, for

the issue of this report—over eighteen months—especially with reference to the subject of tuberculosis, which is just now so actively engaging the attention of the profession, and when every fact developed as the result of observation and study is eagerly sought. The accuracy of this Report, however, and the careful investigations brought to light in it, make it a most valuable contribution to the study of tuberculosis as affecting various organs and tissues. This Report is a standard one, and seems to be thoroughly reliable as to the facts detailed, and the conclusions developed as the result of study by each of the twelve contributors appear to be well founded. Of course, many statistical tables are introduced as the basis of conclusions relating almost entirely to the history of cases, causes of the disease, some symptomatology, much bacteriology, and full pathological findings.

History of the Medical Society of the State of New York. 1807-1906. Edited by JAMES F. WALSH, M. D., Ph. D., LL. D., for the Society. 1907. Small. 8vo. 208 pages. Cloth.

This "History" while of more special interest to doctors of the State of New York, is of very general interest to the profession in other States. It goes back to the day when Virginia (just after the Revolutionary War) had more than twice the population of New York, which latter, at that time, was the fifth of the States in population. The medical history of New York shows the rapid development of the profession in that State and the numerous causes of medical interest it adopted. Incidentally, this "History" records some curious laws—one of which, enacted in 1695, allowed "physicians to travel on the Lord's Day." Every page of the book is full of interesting historical medical information. The book is not stated to be for sale.

Correction of Featural Imperfections. By CHARLES C. MILLER, M. D. Second edition, enlarged. 1908. Published by author, 70 State St., Chicago. 12mo. 160 pages. Prepaid, \$1.50.

This little volume on "Cosmetic Surgery" is the collection and arrangement of a number of articles the author has contributed to various medical journals on the subject—some of which appeared in this journal. The book is illustrated by 96 wood-cuts, etc., showing the various stages of different operation and the subsequent cosmetic facial effects. It has many useful guiding suggestions for the surgeon who under-

takes such work for improving the appearance of the face.

Reference and Dose Book. By C. HENRI LEONARD, M. D., Emeritus Professor Gynecology, Detroit College of Medicine. New and enlarged edition. Cloth. 16mo. 145 pages. 75 cents.

This "*mullum in parvo* reference book" is published by the Illustrated Medical Publishing Co., Detroit. It contains a list of nearly 4,000 remedies, with their medium and maximum doses. It also contains numerous useful tables and a therapeutic index. It also gives a list of poisons and their antidotes, a list of incompatibles, tests for urinary deposits, a few "short stops"—such as removal of adhesive plaster, administration of anesthetics, etc.

Surgery of the Ureter—An Historical Review (1585-1905). By BENJAMIN MERRILL RICKETTS, Ph. B., M. D., LL. D. Cincinnati. 1908. 12mo. 244 pages. Cloth.

"The object of this review is to place the bibliography" of surgery of the ureter in an available form. It is the collection of serial papers published in the *St. Louis Medical Review*. It is strictly an historical review of the subject—bringing to light original suggestions of even centuries ago, and from them the advances of present day surgery of the ureters has been evolved. About 90 pages are given up to bibliography to the anatomy, anomalies, physiology, surgery of the ureters, etc. It is rather a reference than a useful, up-to-date, practical book.

Progressive Medicine. Edited by HOBART AMORY HARE, M. D., Professor of Therapeutics and Materia Medica, Jefferson Medical College. Assisted by H. R. M. LANDIS, M. D. September 1, 1908. Vol. X, No. 3. Whole Number 39. Lea & Febiger. Philadelphia and New York. 8vo. 293 pages. Paper.

This number of the well known "Quarterly digest of advances, discoveries and improvements in the Medical and Surgical Sciences" has chapters on "diseases of the thorax and its viscera," by Dr. William Ewart; "dermatology and syphilis," by Dr. William S. Gottheil; "obstetrics," by Dr. Edward P. Davis; and "diseases of the nervous system" by Dr. William G. Spiller—each chapter giving the advances up to date. Annual subscription price of *Progressive Medicine* is \$6.

Editorial.

The Conference of Health Officers.

The Conference of the members of the Boards of Health of the counties, towns, cities and State, held during the last meeting of the State Society, was exceedingly helpful to all who attended the meeting. Its influence will be felt in the health work of the State. The paper of Dr. Hedges, of the Albemarle County Board of Health, was an interesting recital of the work now being done by one of the largest and richest counties in the State, and furnishes an example for others. Dr. Levy, of the Richmond City Department, gave an interesting description of his Department, and told of the great strides that have been made in the work in the Capital City during the past two years. The discussion by others present was also interesting and instructive. The time given to the Conference was entirely too short as many had come expecting to take part in the discussions, but did not have the opportunity. More time will doubtless be arranged for these Conferences in the future.

The new State Board of Health has already done much to justify its existence, and its work is being accepted and appreciated by the profession of the State. The fears expressed at the time of the passage of the Baker Bill that the appointments would be political have so far proved groundless, and the work is going forward unhampered by any untoward influence. We believe that the new Department will merit the co-operation and support of every physician in the State on account of the tremendous importance of the work it is doing for the people at large.

We believe that the State Department can be of great service in advancing the cause of the physicians' Repeal Bill by showing the need of the doctors' co-operation in all health work. We are convinced that when the people and their representatives in the Legislature appreciate the true relation that the doctors bear to the public health, and how indispensable the physicians are to this work for the public welfare, the Legislature will then unhesitatingly relieve the doctors of their license tax. In the meantime, we sincerely hope that all members

of the medical profession will cordially co-operate in any way they can with the new State Board and the work it is attempting to do.

The Augusta County Medical Society

Held its fall meeting at Staunton, Va., November 4th, with an attendance of thirty-two. The President, Dr. R. S. Griffith, of Basic City, was in the chair, with the Secretary, Dr. A. L. Tynes, of Fishersville, recording. The meeting was characterized by the excellence of the papers read and the full discussion participated in by a number of the fellows.

Dr. Leo Loeb, of the University of Pennsylvania, who was invited to read a paper, could not be present, but his paper, "The Formation of the Maternal Part of the Placenta," was read by Dr. J. S. DeJarnette. Dr. Stephen H. Watts, of the University of Virginia, and Dr. E. G. Williams, of Richmond, were present by invitation, the former reading an interesting paper on Acute Intestinal Obstruction, and the latter explaining the work of the State Board of Health. Dr. H. C. Grant, of Waynesboro read a paper on The Indications for Forceps Delivery.

Under the head of Clinical Cases Dr. Watts exhibited photographs illustrating the successive steps in plastic operations on the lips and nose in his clinic at the University of Virginia. Dr. M. J. Payne, of Staunton, exhibited a negro woman with cirrhosis upon whom he did a Talma's operation some months ago for the relief of distressing ascites, with ideal results. He also showed a case of priapism which responded to the administration of potassium iodide. Dr. A. L. Tynes reported a case of tuberculosis verrucosa cutis of five years' duration in a white woman eighty-one years of age. He also exhibited a negro woman thirty-five years of age, who developed tuberculosis verrucosa cutis at the age of ten. In each case, the back of the hand was the region affected, and family history showed other cases of tuberculosis.

After the business and scientific sessions, an elegant luncheon was served at the hotel. The night session was open to the general public, Dr. Ennion G. Williams, State Health

Commissioner, giving an illustrated talk on tuberculosis.

South Piedmont Medical Society, Va.

This wide-awake Medical Society, representing several counties in the Southern Virginia, under the presidency of Drs. H. B. Melvin, of Houston, Va. and Dr. George A. Stover, of South Boston, Secretary, held its semi-annual session at Danville, November 17th. Dr. C. W. Pritchett, Danville, read a paper on "La Grippe: Its Sequences and Treatment;" Dr. Samuel Lile, Lynchburg, one on Ectopic Gestation; Dr. W. L. Robinson, Danville, made some Clinical Reports on Obstetrics; Dr. A. Murat Willis, Richmond, read a paper on Heroin and Its Treatment, and Dr. Allen W. Freeman, Richmond, delivered a popular address on Tuberculosis, illustrated with lantern slides. The Society will hold its next semi-annual session at South Boston, Va., on the third Tuesday of April, 1909.

The Piedmont Medical Society

Held its last regular meeting for this year at Orange, Va., November 21st. The subject for general discussion was Feeding in Continued Fevers, Dr. J. C. Flippin, of University Station, Charlottesville, being leader. The Secretary of this Society is Dr. Lewis Holladay, of Orange.

The Southside Virginia Medical Association

Will hold its next meeting at Emporia on December 8th. Those intending to read papers should promptly notify the Secretary, Dr. E. F. Reese, Courtland, Va., so that the title of such paper may appear on the official program. All reputable physicians will be cordially welcome.

Dr. A. S. Priddy.

The many friends of Dr. A. S. Priddy, of Marion, Va., will regret to learn that impaired health compels him to resign his position as Superintendent of the Southwest Virginia State Hospital. It is hoped that his retirement from active duties for awhile will result in full re-

storation of health, and that he will be enabled soon to enter upon the full discharge of duties as a private practitioner. His successor as Superintendent of the Southwestern State Hospital is, we understand, to be chosen during the early part of next month.

Correction.

In naming the members of Judiciary Committee elected by the Medical Society of Virginia in the last issue, we inadvertently omitted the name of Dr. George J. Williams, of Newport News, as also a member of that important Committee.

Mr. Frank A. Ruf,

President of the Antikamnia Company, of St. Louis, has been honored by the Shah of Persia, by having conferred upon him the decoration of the "Order of the Lion and the Sun," which is considered a high distinction by his Imperial Majesty.

The Scientific American

Is a weekly publication by Messrs. Munn & Co., of New York City, at \$3.00 a year, that is so constantly full of popular scientific information that it cannot fail to be of interest to every family. It contains information that is of constant use to the housewife, as well as to the heads of families. It also contains many items of medical interest selected from the best of authoritative journals or contributed by reputable physicians.

Report from Pathological Department, Central Indiana Hospital for Insane.

This report, in the form of a bound volume of 392 8vo pages, with maps, statistical tables, etc., is of more than passing interest. Each year a course of clinical and pathological lectures are delivered in the laboratories of the Institution, which are open to the profession. During the year 1908-1909, Drs. Hutchings, Reyer and Sterne, of the Indiana University School of Medicine, and Dr. J. Allen Jackson, representing the Pathological Department of the Institution, will give a weekly course of clinical lectures and demonstrations on nerv-

ous and mental diseases, and on neuro-pathology. The object is to help practitioners to recognize mental diseases in their early stages when they are most frequently curable. So far as we know this course of instruction is a new idea.

The Physicians Visiting List for 1909.

Familiar to all as "Lindsay & Blakistons" list published by P. Blakiston's Sons & Co., Philadelphia, is ready for sale. Beside pocket, tuck and pencil, it is paged for twenty-five to one hundred patients a week, and the prices vary from \$1.00 to \$2.25, without discount. It contains a dose table revised, directions for resuscitation from asphyxia, apriaea, etc.

Obituary Record.

Dr. Richard Newton Hewitt,

Of Campbell Co., Va., died at his residence on Sunday morning Nov. 8, 1908, and was buried in the family burying ground on the following afternoon, not fifty yards from where he was born more than eighty-one years ago. Friends of all grades and conditions, male and female, white and colored, from the surrounding neighborhoods, assembled to pay their respect and show their affection, many going from Lynchburg.

Dr. Hewitt was born Aug. 7th, 1827; in his boyhood attended the county schools, but later entered Emory and Henry College. Studied medicine at the University of Virginia, and graduated in the Medical Department of the University of Pennsylvania in 1849. He practiced his profession in his native county until within a few years, when he retired because of failing health and the infirmities of age. He joined the Medical Society of Va. in 1871, and has been a continuous member since. He was twice married. Dr. Hewitt was a very pronounced Presbyterian, prominent and influential in his church, often representing his congregation in District and State meetings. His nature was broad and liberal, respecting and admitting into the circle of his closest friendship all of other denominations whom he regarded as faithful and true. He abounded in

Christian charity for all, his warm and affectionate heart taking in the whole brotherhood of man. He was noted for his old-fashioned, true Virginia hospitality, a lovable, noble Christian gentleman, with as many true friends which he richly deserved as any one who ever lived in Campbell County.

Dr. Caspar C. Henkel

Died at his home at New Market, Va., November 16, 1908, aged 73 years. He was surgeon in the famous Confederate "Stonewall Jackson Division" during the entire war, surrendering at Appomattox. After the war, he located at New Market, where he practiced until his death. He joined the Medical Society of Virginia in 1879, and attended several sessions. In 1906 he was elected Resident Honorary Member.

Dr. James Edward Tompkins,

Of Fredericksburg, Va., died November 18 1908, at Johns Hopkins Hospital, Baltimore, as the result of a surgical operation. He was born 1867; graduated as Doctor of Medicine from the University of Maryland, 1891, and joined the Medical Society of Virginia the same year, and attended a number of the sessions. His remains were buried in the cemetery of Fredericksburg. He is survived by his mother, his widow and several children.

Dr. Benjamin M. Atkinson,

Born in Lunenburg county, Va., July 15, 1830, died at his home at Staunton, Va., November 18, 1908. He joined the Medical Society of Virginia 1890, and took an active interest in its affairs. He continued in active practice until a few months ago, when compelled to retire because of failing health. For many years he was physician to the Virginia Deaf, Dumb and Blind Institute at Staunton. He is survived by his widow, six daughters and two sons.

Physician—Your ailment lies in the larynx, thorax and epiglottis.

Hooligan—Indade? An' me afther thinkin' th' trouble was in me throat.—*Ex.*

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SOME INSECT BORNE DISEASES.*

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In the advances in our knowledge of the spread of disease, and consequently our knowledge of methods of its prevention, no more important work, and no work of any farther reaching benefit to mankind has been accomplished than that done in the investigation of certain insect borne diseases. It is needless more than to mention as evidences of this fact the practical extinction of yellow fever in the West Indies and Central America, with its tremendous portent to the future of the human race, and the enormous saving of life, particularly in military service, due to our knowledge of the spread of typhoid fever and malaria by insects.

An hypothetical relationship between insects—the term being used loosely to include the arthropoda in general—and the spread of disease has been considered by writers of all times, but no particular importance was given the idea until recent years. The idea that insects transmit certain specific bacteria has been held almost from the beginning of our knowledge of bacteriology. But that insects are responsible for the spread of parasitic animal organisms causative of disease has been scientifically investigated and definitely proven, but comparatively recently.

Serious attention to the relationship between insects and the spread of specific bacteria of disease was first given in the early "nineties," when attention was called to the agency of flies in the spread of cholera. Investigations showed

that the intestinal contents and the excreta of flies fed on cultures of the cholera bacillus, or fed upon the discharges of cholera patients contained virulent cholera bacilli as late as four days after the experimental feeding. In fact, so far as could be judged, the bacilli, far from being destroyed by the secretions of the alimentary tract, seemed rather to have multiplied in the flies' intestines. Cholera infected flies allowed to drink from sterile milk, which was thereupon kept at seventy degrees for sixteen hours, were found so to infect the milk that it was swarming with these dangerous bacilli.

The ravages of typhoid fever in camp life among the British troops in South Africa, and in our own military camps in the South during the Spanish war stimulated investigations which led to an appreciation of the important part played by insects in the spread of typhoid fever. It was found that flies by their excursions between dejecta in the sinks and food on the mess tables and in kitchens, constantly spread the infection. In more recent years certain investigators have turned their attention to vermin collected from the bodies of persons suffering from typhoid fever, and have reported having found the typhoid bacillus in seventy-five per cent. of the lice so examined. But whether typhoid is actually transmitted by this agency is doubtful.

It is now believed that flies may spread anthrax. After feeding upon bodies of animals dead of this disease the fly may be crushed while biting a human being, and the wound thus infected with anthrax bacilli.

Our knowledge of the methods of transmission of plague is constantly increasing. At the present it may be said that while it is believed that the pneumonic form of plague is contracted by inhalation, the septicæmic form is supposed to be contracted by way of the intestinal tract from eating food contaminated with the bacillus pestis, this contamination be-

*Read before the 39th annual session of the Medical Society of Virginia, Richmond, Va., October 20-23, 1908.

ing often caused by infected flies and possibly by ants. For the bacilli have often been demonstrated in the intestines of infected flies, and the same is true of ants which have recently fed upon rats dead of plague. In these ants the bacilli have been demonstrated both in intestinal contents and in their dejecta.

But it is believed that plague is most often spread in the form most commonly met with, that is, the bubonic form. And here again, the importance of insects as disseminators of disease is evident. Plague is primarily a disease of rats, and its existence is dependent upon the persistence of rats about human habitations. A plague-infected rat dies, the rat fleas desert the body, and remaining in cracks and crannies about the house, and finding themselves facing starvation, they seek a new host, which may be a human being. In biting, the flea has a nasty habit of squirting blood from the intestine while sucking blood. The flea bite being irritating, is often scratched, and the discharged contents of the insect's intestine, now abundantly proved to contain the bacillus pestis, is rubbed into the wound caused by the flea in the act of biting.

Recent work has made it very probable that insects are the most important agents in the spread of relapsing fever. Various investigators have credited fleas, bed bugs and lice with transmitting the disease. Examination of lice from patients suffering with this disease have shown the spirochetæ multiplying in the stomach, and spirochetæ have been found abundantly in the secretion expressed from the mouths of such infected vermin. It seems probable that the disease is contracted by scratching the bites of infected lice, and so rubbing into the wound spirochetæ from dejecta and buccal secretion.

Experiments with flies have shown that they may, by their excursions between sputum and food, contaminate food with tuberculosis. Virulent tubercle bacilli have been repeatedly found in the intestinal contents and in the dejecta of flies fed on sputum from phthisical patients. Flies so fed may pollute food both by their excretions and by contact of their feet with the food. More recent investigations indicate that bed bugs having bitten a tuberculous patient may infect a second victim, the bed bug being crushed while biting the second vic-

tim and the wound scratched by the person bitten and so infected.

The predilection of the tetanus bacillus for the intestine of the horse and other animals as an abode and favorable location for multiplication has long been familiar. Lately, attention has been directed not only to the most extraordinary resistance of tetanus spores, but also to the putrefactive qualities of this bacillus and to the fact that it is thus very attractive to the house fly, which very probably is a means of disseminating the organism and causing the disease. In this connection, too, it may be mentioned that various writers have dwelt on the probability of flies disseminating conjunctival diseases and certain exanthemata, and some have stated that leprosy may be spread by flies. It is, of course, self-evident that flies may be responsible for the dissemination of various pyogenic bacteria.

Turning, now, to the role played by insects in the dissemination of diseases due to parasitic organisms belonging to the animal kingdom, it may be said that the phenomenon has been most thoroughly demonstrated in the various forms of malaria. It will be remembered that malaria is caused by a parasite, an hæmamoeba, belonging to the lowest order of the animal kingdom, the protozoa. The definitive host of this parasite is certain mosquitoes of the genus anopheles, the intermediary host man, and in the course of its development the parasite undergoes a sexual cycle in the mosquito and an asexual cycle in man.

In man the minute parasite invades the red blood corpuscles, develops at their expense with the production of pigment, and, having divided into spores, becomes free in the blood and ready for another endogenous asexual cycle. The liberation of these spores being coincident with the malarial chill, it has been assumed that some toxin is liberated with the spores, and, depending upon the periodocity of the sporulation, we have the periodicity of the fever noted in malaria, and, depending on the spacing of sporulation and the number of groups of parasites, tertian, quartan and quotidian types of fever.

After a number of generations of these asexual forms, male and female parasites, homologous with spermatozoa and ova, appear which are incapable of further multiplication within

man, but which, when ingested in the act of blood sucking by certain species of the anopheles mosquito, unite in the stomach of the insect, penetrate the wall, develop, and, dividing into sporozoites, burst into the body cavity and thereupon invade the veneno salivary gland where they remain until inoculated into the next human being bitten by the mosquito. About ten days is required for this sexual cycle.

Mosquitos (culicidæ) are well nigh ubiquitous. They extend from the frigid zones to the equator. They live upon the juices of fruits and only the females suck the blood of other organisms. When impregnated, the female lays her eggs singly or in boat shaped masses upon the surface of still, fresh or brackish water. Temperature conditions being favorable, the larvæ hatch in two or three days and lie at the surface in order to breathe, the position assumed depending upon the genus of mosquito. Becoming a pupa, the organism ceases to feed, and in a day or two more the pupa case bursts and the adult insect or imago emerges. At ordinary summer temperature this development from egg to imago consumes approximately in the malaria bearing genus anopheles twenty-five days, in the harmless culex fifteen days, and in stegomyia, the bearer of yellow fever, eleven days.

In winter the adults hibernate in dark, sheltered nooks. The larvæ, too, may survive a winter and the eggs are shown to be able to survive freezing. Mosquitos in general are weak and timid fliers, rarely straying far from their native pool of their own volition and rarely rising far from the ground. The anopheles is a particularly weak flyer. But, carried by winds, mosquitos may travel long distances; certain observers have even reported that mosquitos have invaded ships ten miles from shore.

In this country we have twenty-four species of mosquitos representing nine genera. Most of them belong to the genus culex and, so far as known, are harmless. There are three species of the malaria bearing anopheles, and, lastly, stegomyia calopus, which has been proved to spread yellow fever.

In general the anopheles is not, as is stegomyia, a domestic mosquito. The anopheles prefers to breed in small, natural puddles and ponds of still water in fields and swamps. On the other hand, stegomyia, the disseminator of

yellow fever, more commonly breeds in the populous centers and prefers little collections of water about houses and yards in which to lay its eggs. In a general way, too, the anopheles may be distinguished from stegomyia by the fact that in anopheles the axes of the proboscis head and thorax are in line with each other, whereas in stegomyia the head and proboscis lie at an angle to the thorax. Therefore, while anopheles somewhat resembles a bradawl, stegomyia resembles a hunchback. In the act of sucking blood the anopheles gives the impression that it is trying to stand upon its head. Again, the larvæ of the anopheles, when breathing at the surface of the water, lie nearly horizontally, whereas the larvæ of stegomyia hang at an angle with the surface.

Among the many interesting peculiarities of mosquitos, it has been noted that mosquitos of the genus anopheles, and possibly others, show a varying predilection for alighting on certain colors. Navy blue attracts them most, and orange and white least, and advantage of this fact may be taken in choosing clothing in localities where mosquitos are troublesome. The odor of the African has been proved to attract mosquitos more than does the odor of the white man.

Whereas it has been proved that two factors are essential for the spread of malaria, the parasite in human blood and the anopheles mosquito, it is known that certain countries formerly highly malarious and still presenting these two factors are now no longer malarious, although the inhabitants have been proved not immune to malaria. In such instances it is probable that the malarial parasites being living organisms and necessarily competing for existence and liable to be crushed out by other organisms in the struggle, have been preyed upon and rendered extinct by some natural enemy.

Next to malaria the part played by mosquitos in spreading disease has been most conclusively demonstrated in filariasis, which has been proved to be disseminated by a number of species of culex and anopheles, the matamorphosis in the mosquito requiring about seventeen days. It will be remembered that in filariasis the parent worm, a hair like nematode, about three inches long, occupies a dilatation in some lymphatic channel, whereas myriads of minute embryos infest the peripheral blood while the patient

sleeps, and the larger arteries and lungs while the patient is awake. Being ingested by a mosquito the embryos escape from their sheaths in the insect's stomach and penetrate the wall. The metamorphosed worm thereupon makes its way to the mosquito's proboscis, enters the wound made when the insect bites a human being and thereupon, having established itself in some lymphatic channel with a worm of the opposite sex, reaches maturity and breeds other embryos.

Recently dengue has apparently been experimentally transferred by allowing a mosquito to bite first a patient suffering from dengue and then a man in health in a non-infected country. It is claimed that an amœboid parasite has been found in the red blood corpuscles showing cyclic development and flagellated forms.

It is now believed that a fly, very similar to the ordinary house fly, spreads that terrible disease, African Lethargy, or Sleeping Sickness. For sometime past the pathological manifestations of this disease—essentially an extensive meningo-encephalitis with infiltration of blood vessels of brain and cord with leucocytes—have been known. But only recently has it been demonstrated that the blood of patients suffering from this dread disease is swarming with minute unicellular motile animal parasites known as trypanosomes, and that these organisms are introduced by a biting fly. It is believed that the parasite completes a sexual cycle in the fly before the latter can infect a new intermediary host, just as the malarial parasite completes its sexual cycle in the mosquito.

Considering now the prevention of insect-borne diseases, three agents—cleanliness, mosquito netting, and insecticides—are yearly becoming recognized as of more importance in this branch of preventive medicine. Cleanliness, for instance, implies to the sanitarian the removal and destruction of collections of such organic matter as insects may breed in. House flies, we now know, deposit ova not only in horse manure, but in human excrement as well as very probably in countless varieties of organic matter, and one obvious method of lessening the numbers of these dangerous pests is the removal of collections of organic matter where flies may breed. Where removal of these collections is impracticable, the flies may be kept away by proper screening, or their breed-

ing prevented by chemical treatment of the organic deposits.

The use of mosquito netting to prevent insects becoming infected by reaching and biting infected individuals and in preventing insects once infected from reaching and biting other human beings need hardly be mentioned, as it is now in such common use. Netting is also important in preventing insects contaminated by contact with infected discharges from reaching and mechanically infecting human food. Therefore, not only should dejecta be destroyed, rendered innocuous by chemicals, or, if this is impossible, screened, but such food as must be necessarily exposed should be screened from ingress of insects. And the same holds true in regard to such collections of water wherein mosquitos may deposit eggs and which cannot be boiled.

Turning now to such articles as are used as insecticides, it may be said that arsenic has practically supplanted all other substances as a food poison for biting insects. It is used as Paris green and London purple. Petroleum applied at the rate of one ounce to fifteen square feet of water is used to destroy all forms of aquatic insect life, including the larvæ of mosquitos and the adult females coming to lay their eggs. Bisulphide of carbon evaporated in a sealed room destroys vermin. But it is dangerously inflammable and explosive and deadly to higher forms of life.

Pyrethrum powder is used as a powder or burned. It is not very powerful. Against mosquitos it is burned in a sealed room, and although it kills many, some mosquitos are only stupefied. Five pounds for each one thousand cubic feet of air space should be used when the powder is burned for this purpose.

Sulphur is undoubtedly the most valuable insecticide we possess and has no superior in destroying contagion spread by vermin. As sulphur dioxide it kills mosquitos in one hour, rats in two hours. As an insecticide it is as powerful dry as wet, and, contrary to formaldehyde, it has surprising powers of penetrating clothing and fabrics, killing mosquitos even when hidden under eight layers of towelling in one hour, and that, too, when used in very dilute proportions. Sulphur dioxide bleaches coloring matters, attacks metals and weakens the tensile strength of cotton and linen fabrics

owing to its forming sulphuric acid. One pound of sulphur burned in one thousand cubic feet of air space gives one per cent. strength. Burning it in pots is the easiest, cheapest and most efficient method. The pots should be placed well above the floor and ignited by first pouring in alcohol and then throwing in a lighted match. Liquid sulphur dioxide in tubes may be used where there is danger of fire, but it is expensive. Sulphur furnaces have little to recommend them.

Formaldehyde gas, while holding the front rank as a germicide, is a feeble insecticide. In the strength prescribed for bacterial disinfection (ten ounces of formalin per one thousand cubic feet of air space for six hours), it will kill mosquitos if brought in direct contact with the insect, but this is difficult to do, as the mosquitos hide in the folds of bedding, draperies and such articles, where the gas does not penetrate in sufficient strength to kill them. Therefore, to use this gas successfully to kill mosquitos, the room must be tightly sealed, a large volume of gas must be liberated quickly and the room must be free from places where mosquitos may successfully seek refuge.

Hydrocyanic acid gas, used much in greenhouses for destruction of insect pests, is used sometimes in granaries and barns and other uninhabited buildings for the destruction of vermin. Its employment is attended with so much danger to human life that its use is impracticable about dwellings.

STERILIZATION OF HABITUAL CRIMINALS, WITH REPORT OF CASES.

By CHARLES V. CARRINGTON, M. D., Richmond, Va.
Surgeon to the Virginia State Penitentiary.

This is a subject which should demand the closest attention, and the most careful and painstaking investigation of all criminologists. We are living in an age of reformation and advancement, in our ideas and modes of treatment of criminals. With few exceptions, every State in the Union, every civilized country in the world, has in recent years given time, money and prayerful attention to the immense problem of how to humanely punish, and at the same time reform, the criminal classes.

Every sensible person knows that crime and criminals are a necessary adjunct to civilized life, and of late years reformation of our crim-

inal classes, and measures for the prevention of crime have, rightly, taken the front rank in our dealings with the unfortunates who fill our prisons to-day.

Our Juvenile Courts, Reformatories, Probation Officers, societies for aid to the discharged convicts—all are doing a splendid work. Prevention is practically their motto, and is the motto of every person interested in the handling of criminals.

After ten years of investigation as prison surgeon, and during that time seeing and treating thousands of our criminals, black and white, I am unreservedly of the opinion that sterilization of our habitual criminals is a proper measure, and I believe that if sterilization were properly enforced with habitual criminals we would have fewer habitual criminals.

The punitive side of our dealings with criminals is always to the front, and naturally so. Punish him is of course the first proposition. Lock him up. Then comes our Christianizing reformatory measures, all splendid in their way, and as far as they go; but for the habitual criminal, there must be some powerful deterrent remedy, and sterilization is undoubtedly that remedy. Stop the breed! This is not a nice subject; most of us shrink from it, and refer to it in an undertone. Personally, I have always abhorred the discussion of this and kindred subjects, but what we most desire is light on the subject of how to deal with our habitual criminals, and one of the first things that should be done to an habitual criminal is to sterilize him.

This is a pioneer paper and will, I hope, provoke discussion. When I say sterilize the habitual criminal, I know that a very clear understanding of "habitual" has to be arrived at, before my remedy would be a just one to enforce. The incorrigible "second turner" would largely, to my mind, fill the "habitual" class, and should be treated accordingly. Certain revolting crimes, if not instantly punished with death, such as arson, rape, train wrecking, murder in the first degree, and life imprisonment, should be put in the habitual criminal class, and treated accordingly.

All of us who have had any extended experience along these lines, know how certain families, from father to son, to grandson, furnish recruits regularly for our army of crimi-

nals. Ask any detective with forty years' experience around headquarters what he knows on the subject of, shall we call it "the hereditary criminal?" and he will undoubtedly tell you that a very large majority of our criminals come from criminal families. Now, if the grandfathers had only been sterilized, what a lot of crime and suffering would have been prevented. He wasn't though, and we have reaped the whirlwind of crime from the son and the grandson.

Now, in our enlightened age let us put a stop to this hideous reproduction of criminals, and sterilize the criminal grandson for the good it will do in the coming years.

It is not fair or right to specialize families in a paper of this character, but certain families in Virginia have been regularly represented on the prison rolls of our institution for the last fifty years, and will go on being represented to the uttermost generation, if the breed is not stopped. I have sterilized two habitual criminals since I have been surgeon to the Virginia Penitentiary, and in each case it was as proper a health measure as the removal of an appendix, or the cutting off of a palate could have been. The operation for sterilization is so simple, and so quickly done, and has so little of painful after effects, that in one of my cases the subject did not miss a day from his work, and beyond a slight local tenderness, which disappeared in a few days, evinced no discomfort from the operation.

In my cases I made a slight nick through the skin of the scrotum, near the pubis, and with a curved needle, took up *vas deferans* and vessels, and tied them all off; one catgut stitch closed the skin wound, and a collodion dressing completed the operation. Of course, this was all done with every aseptic precaution observed, and took less time to do than it has taken me to tell you about it.

About six years ago I sterilized my first case. This man, five or six years previous to that time, had been sentenced to the penitentiary for an especially brutal murder—a long sentence. After being in the penitentiary for a short time he became so violent and homicidal in his actions that he was adjudged insane, and sent to the Colored Insane Asylum, at Petersburg, Virginia. After a time there, he killed a fellow-inmate, and very nearly

killed an attendant. He got better, and was sent back to the penitentiary to complete his sentence, but soon got more violently insane than ever, and was returned to the asylum. This bandying back and forth between the asylum and the penitentiary took place once or twice more, as he got better or worse. Finally, he escaped from the asylum, and was eventually recaptured and returned to the penitentiary—the Legislature about this time having passed a law that no insane convict should be sent to any of the insane asylums.

This poor creature at this time was the wildest, most violent, and the most homicidal devil I have ever dreamed of seeing. He was also the fiercest, most consistent masturbator I ever heard of; as strong as a bull, as cunning as a hyena, and more ferocious and quite as dangerous as a Bengal tiger. I determined to tame him, and under general anesthesia, sterilized him. To-day, nearly six years later, he is a slick, fat, docile prisoner, a trusty about the yard—cured by sterilization.

The second case was a young degenerate who, even at the Reformatory, where he was sent when quite young, was a notoriously lusty, beastful Sodomist and masturbator. When he came back to the penitentiary as a "second term," and was even more confirmed in his bestial habits, I unhesitatingly sterilized him, and now he is a docile, model prisoner.

These two cases, cured by sterilization, simply show what great good could be done if such cases, (and there are hundreds in our prisons), were promptly sterilized.

932 Park Avenue.

THE CAUSES AND TREATMENT OF FREQUENT MICTURITION AND DYSURIA.*

By C. S. VENABLE, M. D., San Antonio, Texas.

The titles of this paper being often used synonymously, and being symptoms of pathological or psychological conditions rather than diseases per se, I will give the etiological factors and the treatment of those conditions as they are restricted by the scope of my theme.

Many systemic diseases are characterized by these urinary symptoms, such as chronic interstitial nephritis with its almost pathognomonic nocturnal frequency; diabetes mellitus and in-

*Read before the Bexar County (Texas) Medical Society, October 29, 1908.

spidus from the associated polyuria necessarily causing frequency; dentition with which is so often associated the frequent wetting of infancy; malaria, in which the urine is copious during and after the chill; angina pectoris, marked by frequency after the paroxysm; sun stroke, of which frequency is a symptom; during the onset of acute febrile diseases, and associated with the typhoid state; the vesical crisis of locomotor ataxia, and inflammatory conditions of the intestinal tract—notably acute appendicitis, intussusception with its subsequent colitis and dysentery of primary or secondary origin; and lastly, the frequency met with in increased arterial tension during periods of mental stress or excitement, which is more physiological than pathological. Other than to recommend such anti-spasmodics as hyoscyamus, belladonna, and opium, when indicated by intense tenesmus and strangury, I refer you to the works on Therapeutics and Practice of Medicine for the alleviation of these symptoms which are inseparable from the disease producing them.

Classing pathological conditions of the urethra, urinary bladder, ureter and kidney, as more direct causes of these symptoms, I will consider them separately in the order named.

Injury of the urethra from external violence; from foreign bodies in the urethra introduced by the patient, or calculus primarily urethral or of renal, cystic or prostatic origin, produces marked strangury and frequent micturition. The treatment in case of injury from external violence is rest, ice, and such local means as may best promote healing by first intention; while if due to foreign bodies, removal by extraction, or if impossible, a urethrotomy must be done.

Dilatation of the urethra from stricture; passage or extraction of a calculus or foreign body; forcible dilatation for diagnostic or therapeutic purposes; new growths, such as condylomata, polypi and caruncle near the meatus, which are rare in the male; small retention cysts and malignant growths, which are uncommon; or distinctively in the female from coitus per urethram with atresia of the vagina; also failure of involution and subsequent catarrh are frequent conditions. Partial incontinence or involuntary escape of urine from a jar or jolt are characteristic. If accompanied by urethritis or prolapse of the urethra, dysuria is marked, while if dilatation is only slight, there is no incontinence or dysuria, but frequent desire to micturate. The indications for treatment are first to restore the mucous membrane by local and general means, and second, by surgical intervention to remove the cause. If due to a stricture, sounds, perfectly elastic, should be passed, and if too tight to allow its passage, filliform bougies through a hollow sound must be first used. If of unyielding scar tissue, the cicatricial band may be divided with a urethrotome, or if long and hard, an external urethrectomy is indicated, in which the scar tissue is desiccated away, and the edges brought together over a catheter. In the female resection of a portion of the anterior vaginal wall and posterior urethral wall lessens the calibre. After this operation, a Skene's pessary is to be worn for some time. When due to a new growth, whether benign or malignant, its removal is necessary when operable. When nothing can be done per urethram, suprapubic puncture or cystotomy may be indicated to relieve the then exquisite strangury and tenesmus.

Spasmodic stricture or spasmodic contraction of the compressor urinæ from psychic causes, reflex irritation or atresia of the meatus in young men of nervous, hysterical or irritable temperament, may be complicated by strangury. The treatment is with sedatives and the passage of sounds. If the atresia is sufficient not to admit of this, the meatus must be incised to allow the passage of about a fourteen French, after which larger sounds are to be used.

Urethrocele may occur in male subjects from stricture, but is more often seen in females due to trauma during labor. Dysuria is more marked and often partial incontinence supervenes. In the male, treatment must be directed to dilatation or division of the stricture; in the female, the wearing of a Skene's pessary often gives relief, or a plastic operation may be performed. If from partial occlusion, the cause must be removed. It is at

times necessary to produce an artificial vesico-vaginal fistula, after which the urethritis is treated and later the redundancy of mucous membrane removed and the fistula closed.

Para-urethral abscess in the male from ulceration and puncture by foreign bodies, or behind a stricture, and sub-urethral abscess in the female from occlusion of Skene's ducts by inflammation or associated with the urethrocele, give rise to dysuria. Treatment is incision and drainage or, in the female, removal of a portion of the sac sub-urethrally, and packing. The fistula established may be closed later.

Non-specific urethritis, or that caused by traumatism and infection from rough and unclean instrumentation, unclean catheterization, or too long use of a continuous catheter; irritating injections; chancre or chancroid; herpes, gout and eczema; foreign bodies; sexual excesses or perversions and masturbation; abuse of alcohol and extension of inflammation and infection from the bladder, are characterized by urinary disturbances. The treatment of the invariably frequent and often painful micturition found under these conditions is, of course, to remove the cause if possible, and to alleviate these symptoms by making the urine bland, together with topical applications and injections or irrigations. Tubercular urethritis is rare, but when present opium in heroic doses is indicated to relieve the exquisitely painful micturition.

In specific urethritis, or that due to the gonococcus of Neisser, the dysuria and frequent micturition are among the earliest and most pathognomonic symptoms which increase in severity with the advancing inflammation. In sub-acute, posterior, or chronic urethritis, strangury is less marked or may be entirely absent, while the frequency persists. In this I include prostatitis, cowperitis, seminal vesiculitis, and epididymitis. I shall not go into the treatment of gonorrhea, but only the alleviation of these painful symptoms. Dilution and alkalization of the urine by copious drafts of water and administration of alkalies; the use of anti-spasmodics, such as hyoscyamus, belladonna and opium, either by the mouth or in suppository, when the strangury is exquis-

ite, hot sitz-baths during micturition give great relief. This is especially true in case of involvement of the prostate.

The dysuria associated with prolapse or eversion of the urethra, usually met with in old women, poorly nourished or chlorotic girls, and strumous children; from laceration during labor; caruncle, polypus, condyloma or malignant growth; urethritis, vesicle tenesmus or the straining associated with anal fissure, must be met by local and general means, according to the indications. Excision of the redundant mucous membrane is often necessary, and in case of new growth, removal is essential, even to the extent of resection of the urethra as far as the sphincter.

The amount of tenesmus in vesico-urethral fissure from stones, labor, instrumentation or urethritis, depends upon the situation of the lesion. If wholly in the urethra, there may be only slight burning on micturition, but if, as more frequently happens, the base of the bladder is involved, there is by constant irritation constant tenesmus and much pain, before and after voiding. Relief is obtained often by simple divulsion of the vesico-urethral junction. This failing, an artificial vesico-vaginal fistula must be established and the divulsion repeated. Both heal about the same time.

Extra-vesical calculus is seldom primary, but due to the passage of a stone from the kidney to the bladder and lodgment in the urethra at the prostatic sinus; in the membranous urethra behind the triangular ligament; at the penoscrotal junction or behind a stricture. The vesical tenesmus and irritability always associated is most marked when the stone is partially within or next to the bladder. The removal of this source of irritation which is necessary for relief, may be accomplished through a systematic attempt made by the patient to pass it. He is then made to drink a large amount of water in order to distend his bladder, and is placed in a hot sitz-bath; he then begins to urinate, and suddenly constricting the urethra, the tract is dilated, and when quickly released, the stone may be washed through.

Having classed prostatitis of immediate spec-

ific origin with acute or chronic urethritis, I will pass on to prostatorrhea and spermatorrhea, which, though oftentimes a remote sequel of gonorrhea, may be secondary to other conditions. Prior to, during, and just following the ejaculation in these conditions, the dysuria is continuous and frequently extreme. Massage of the prostate and milking the ejaculatory ducts are indicated for the relief of the condition, and thereby removal of the urinary symptoms which are of foremost importance in the eyes of the patient.

Hypertrophy of the prostate occurs in thirty per cent. of men over fifty years of age and one in every four of these present urinary symptoms. Notably in the beginning, the frequent micturition at night must be excluded from that pathognomonic symptom of chronic interstitial nephritis. This condition is subject to acute inflammatory exacerbations during which period the simple frequency is overshadowed by the intense dysuria. In the treatment we must keep the urine bland by proper hygiene and regulation of diet and avoidance of all excesses. During periods of marked dysuria, anti-spasmodics are indicated. In case of retention and overflow, the catheter must be resorted to, and let me warn you that the oftentimes serious aftermath of the catheter life is due to the total lack of, or cursory, education given the patient by his physician. Lastly, we have the operative measures, which may be divided into the palliative suprapubic aspiration and cystotomy, or the radical prostatectomy.

In mentioning separately the condition known as "bar at the neck of the bladder," which is so often characterized by frequency of micturition, or more especially the frequent desire, that is, the strangury of Paget, I refer to the spasmodic variety which is not necessarily associated with enlarged prostate, but may be due to uric acid; and the mucous type which is due to enlarged prostate with hypoplastic sticking at the apex of the trigone. The treatment is general, directed towards the uric acid diathesis; and local, by deep injections of silver to the hypersensitive prostatic portion of the urethra. Ice water irrigation through a return rectal nozzle may give great relief.

Malignant disease of the prostate or benign

growths, which are very rare, give rise to the same symposium. The treatment is radical when operable, as the valuable opportunity for the life of the patient may be thrown away by too long resort to palliative means. In the inoperable cases, any means that will give relief to the patient are warranted. Again in prostatic abscess, with its frequent and exquisitely painful micturition, early incision and drainage is urgently indicated, as soon as the diagnosis is positively made, for by resort to fomentation, opiates and other means of palliation, waiting for the miracle, absorption, to occur, the abscess may rupture into the loose surrounding tissues, and the great probability of a fatal peritonitis or death by septicemia or septic absorption, result.

In passing to the urinary bladder, I will take first cystitis, the predominant symptoms of which are tenesmus, strangury, painful and frequent micturition. The causes are predisposing and exciting. Such predisposing causes as congestion from pelvic inflammation and cold; retention, giving rise to over distension or residual urine; from partial obstruction to the outlet; traumatism from instrumentation, labor or external violence; foreign bodies, new growths and abnormal urine, give rise to frequent micturition and often dysuria, though the exciting causes, which are pathogenic organisms, notably the gonococcus, staphylococcus streptococcus, colon bacillus, typhoid, or tubercle bacillus, give rise to a more intense inflammatory disturbance and produce a more pronounced degree of vesical tenesmus, micturition often being so frequent that the patient is unable to retain more than a few drops of urine at a time. The administration of hyoscyamus or belladonna may give relief in the milder types, while resort to opium in suppositories is often indicated. Hot fomentations, sitz baths, or having the patient recumbent and turned on the side during micturition may relieve the dysuria. For the treatment, and if possible, the removal, of the predisposing and exciting causes, without which the simple palliative means recommended for the alleviation of these symptoms is of little avail, I refer you to works on gynecology and genito-urinary surgery.

Vesical calculus, though considered under foreign bodies in the bladder causing cystitis, is of so common occurrence and gives rise so frequently to urinary symptoms per se, that it is deserving of a separate heading. It is less frequently seen in women than men, and when present, usually of primary origin, as a kidney stone is apt to pass out through the short urethra unnoticed. In the male it is more frequently secondary, the kidney stone acting as a focus for the deposit of urinary salts during the associated phosphaturia, oxaluria, or uric acid diathesis, though the presence of any other foreign body may be the focus, or it may occur as a primary condition from a deposit of these salts, and may be multiple or single. The symptoms are increased while standing or walking and are dependent in severity on the size and character of the stone. Removal of the stone is primarily indicated in all cases, which may be done by lithopaxy if it is soft, unencysted and not over an inch in diameter; if this does not obtain cystotomy must be done—suprapubically in males and young girls, or by the vaginal route in multipara or females with a sufficiently large outlet.

I wish to especially call your attention to neoplasms of the bladder, which, in their insidious progress, may cause but slight vesical irritability, and that dependent on their size, character and location, and in their incipency, these symptoms are so easily palliated that both the physician and patient are put in a position of false security till the golden moments for cure are past, while, by the early use of the cystoscope we may at once know the nature of that with which we have to deal. Of these new growths, pedunculated or benign papilloma are, perhaps, the most common. Next in frequency of occurrence are carcinoma and the broad based or malignant papilloma, with its indurated walls and ulcerative changes. Sarcoma, adenoma, myoma, lipoma, and enchondroma are rare. The treatment when operable is unconditionally removal, which may be accomplished per urethram if small and pedunculated; by the suprapubic route, which is the most satisfactory, or by vaginal cystotomy in the female, if pedunculated or sessile and of benign nature. In those

inoperable cases, local irrigation and topical applications may be sufficient, while a suprapubic fistula in the male and a vesico-vaginal fistula in the female may be necessary. In these cases when the urinary symptoms are exquisite, opium must be resorted to.

Contraction of the lumen of the bladder by hypertrophic thickening; atrophic changes in the walls from disuse, following cystitis, vesical irritability and enuresis of childhood continuing after puberty; or from operations on its walls with resultant scar, produce a degree of frequency of micturition dependent on the resulting calibre which is relieved by distension and relaxation through hydrostatic means till the muscle tone and lumen are returned to the normal.

Vesical irritability or irritability at the neck of the bladder in which the mucous membrane may be normal, or only a slight hyperemia of the trigone, or ureteral orifices, is always marked by frequent micturition and often associated dysuria; it is seen in neurasthenic or hysterical women from overwork, bad hygiene, dyspepsia, irregularities, dysmenorrhea, malpositions, diseased ovaries, pelvic inflammations, cervical lacerations and vaginismus; also in malaria when the urinary symptoms are most marked in the afternoon and evening; excessive coitus or masturbation frequently give rise to vesical hyperesthesia, while pelvic or abdominal tumors, including pregnancy, from mechanical pressure cause a frequent desire to empty the bladder. Again urinary changes, as in lithemia, oxaluria, phosphaturia, or ingestion of irritants as turpentine, cantharides, etc.; or condiments, certain food stuffs, notably asparagus, and alcoholic beverages, often cause frequent micturition, but seldom strangury. These symptoms may be reproduced reflexly through excitation of the spinal centers by hemorrhoids, fissure or fistula in ano, seat worms in children, or proctitis from any cause. The treatment is primarily referable to removal of the cause, and that directly applicable to the prevailing condition. When such urinary changes as phosphaturia, oxaluria, or lithemia, are present, the administration of benzoate of ammonia, nitro-muriatic acid, and alkalies are specifically indicated respectively, while cop-

ious drafts of water, dietetic restrictions, exercise and general hygiene are necessary adjuncts in all. The forcible dilatation of the urethra with topical applications of silver to the vesico-urethral junction is often curative in those cases of neurotic origin.

Cystocele following prolapse of the uterus, vaginal laceration, sub-involution or general relaxation and any or all of these causes combined is marked by a sense of vesical fullness and dragging with a constant or frequent desire to urinate. Cystitis soon supervenes from the residual urine which undergoes ammoniacal decomposition, when of course, the dysuria is more pronounced. The palliative treatment is the wearing of a Skene's pessary and irrigations, while the curative is necessarily operative, and must be directed to the cause, which, if prolapse, calls for a suspension; a vaginal tear should be repaired; or if there is sub-involution and general relaxation, a colporrhaphy is indicated.

The pathological or surgical conditions of the ureter giving rise to these urinary symptoms may be enumerated as injuries from gunshot wounds or stab wounds, or more frequently, during surgical operations. Frequent and painful micturition is marked while the total quantity passed is diminished. Immediate restoration of the integrity of the canal is indicated by ureterorrhaphy, ureterostomy, uretero-enterostomy, ureterostomy, or nephro-ureterectomy, the choice of operation being dependent on the character and situation of the wound.

Ureteral calculi are not so frequent as in other portions of the urinary tract, and are usually from the pelvis of the kidney, though occasionally primary following operations on the ureter when a suture is left which becomes a focus. If acute, that is during the passage from the kidney to the bladder, dysuria is a prominent symptom. If chronic, that is, lodged, dysuria may be concomitant with symptoms of hydroureter and hydronephrosis. The treatment is that of the ureteral colic, consisting, in the acute form, of hot tub or sitz baths, fomentations, morphia, or even chloroform, to relieve the spasm. The treatment between attacks does not concern this paper. If chronic, removal is necessary, but first must

be ascertained the location of the calculus upon which depends the operation. This is determined by sounding and measuring the ureter. If above the superior strait, a lumbar incision is indicated; via the abdominal route, if between the superior strait and broad ligament in the female, or below the pelvic brim in the male. In the female, if between the broad ligament and the bladder, the vaginal route may be employed; and if protruding at the ureteral orifice, it may be expelled into the bladder by manipulation. The presence of such foreign bodies as blood clots, pus, or *ecchinococcus* cysts in the ureter may give rise to the same symptoms, but are rarely subject to the same treatment, as they will probably soften or disorganize and be passed.

Ureteritis is almost always secondary by extension of inflammation up from the bladder or down from the kidneys, the infecting agents being those enumerated with cystitis; or may be primary from the presence of a foreign body in the canal. The dysuria and frequent micturition are masked by symptoms dependent on the source of infection, but when of primary origin, are more marked than in simple chronic ureteral calculus. These symptoms are characteristic of tuberculosis of the ureter, and often so prominent that the patient is compelled to void every few moments of the day and night, each act being accompanied by exquisite pain and tenismus. The treatment is expectant with removal of the cause and treatment of the associated conditions. If tubercular, local and general measures are of little or no avail; while, if the second kidney is sound, nephro-ureterectomy is indicated.

Renal affections giving rise to these symptoms are: sub-parietal injuries varying in degree from slight contusion to extensive lacerations. The dysuria is more marked in the presence of clots in the ureter or bladder. Rest in bed, compression, application of ice, administration of adrenalin or ergot, and if indicated, nephorrhaphy or nephrectomy constitute the treatment.

The urgency of the urinary symptoms due to nephro-lithiasis is dependent on the size and character of the stone, or stones, present, and is more frequently intermittent, occurring only during the paroxysmal seizures. The relief of

these symptoms is immediately palliative, summoning to our aid such means as referred to under ureteral calculus. When the symptoms are persistent and increase in severity, or the attacks become more frequent and intense, such radical measures as nephrotomy, nephrolithotomy or nephrectomy are indicated. Cystic or solid tumors of the kidney rarely give rise to disorders of micturition unless the ureter becomes involved. Movable kidney does not give rise to urinary symptoms, unless torsion of the ureter occurs, when during this, Deitl's crisis, the strangury, tenesmus, and urgent desire to micturate are intense. The often associated hydronephrosis is followed by an increase in the frequency of micturition due to the moderate polyuria established. Replacement of the kidney gives immediate relief, which may be accomplished by manipulation with or without inversion of the patient, and is to be maintained in position by a properly adjusted pad or binder. It may be necessary to give morphia in heroic doses until this is accomplished.

Pyelitis, pyelonephritis and pyonephrosis of primary origin from trauma, calculus, tuberculosis, typhoid, osteomyelitis, pyemia, septicemia and irritating drugs, or secondary from extension of inflammation upward, are associated with urgent and frequent micturition, the relief of which symptoms is the treatment of the causative agent, and rest, copious fluid, alkalies, urotropin and opium, or, if indicated, a nephrotomy, or nephrectomy performed.

Tuberculosis of the kidney, though mentioned in the preceding clause as an etiological factor is *per se* a condition of so great import, and is responsible for such important urinary symptoms that it warrants special consideration. Frequency of micturition is often one of the earliest symptoms, and as the disease advances, urgency, pain and tenesmus become more pronounced, even when uncomplicated by tuberculosis or other inflammatory changes in the urinary tract. The treatment is nephrectomy as soon as diagnosed, provided the other kidney is sound, which is to be determined by the use of Harris's segregator, or catheterization of both ureters. If both kidneys are involved relief may be had in urinary antisepsis, renal irrigations and the general hygienic

and roborant measures indicated in tuberculosis. Bircher reports in the *Munchener Medizinische Wochenschrift* two cases cured by X-Ray exposures.

Those causes more remote are the pathological conditions involving the genitals and giving rise secondarily to disorders of micturition, either by direct extension of inflammation to the urinary passages, by mechanical means or reflexly through the spinal centers, such as: balinitis, posthitis, balano-posthitis, and phimosis in the male, in which circumcision is indicated. In the female, adherent or redundant prepuce, adherent labia or clitoris, imperforate hymen damming back the vaginal secretions, and verrucae about the urethral orifice, may each cause urinary symptoms which are relieved by breaking the adhesions, excisions of the redundancy, incision of the imperforate hymen and removal of the verrucae, respectively. Again foreign bodies in the female passages may by their presence mechanically, or by the inflammatory conditions produced, give rise to vesical or urethral disturbances, and must be removed.

Urinary or fecal fistulas, notably vesico-vaginal, in which, if following labor, before the fistulous tract is established, dysuria is marked; vesico-uterine, in which the urinary symptoms may be of mechanical origin, but more frequently directly inflammatory following vesical involvement; urethro-vaginal, giving rise to vesical irritability only when inflammatory changes are instituted and recto-vaginal, entero-vaginal, recto-perineal, or recto-labial, producing disorders of micturition from subsequent vaginitis, urethritis, and cystitis. The treatment is, with the exception of a vesico-vaginal or urethro-vaginal fistula of recent occurrence—which may by local means be induced to close spontaneously—invariably operative.

Moore Building.

THE MININ LIGHT.*

By MARK W. PEYSER, M. D., Richmond, Va.
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The therapeutic success attendant upon the employment of the X-Rays and Finsen light

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has led to extensive investigations of their physiologic action, and to the invention by many experimenters of various apparatuses in the hope that they would prove as great, if not more, benefit, and at the same time, be less bulky and complicated, more easily handled and less expensive than the machines heretofore required.

Many modifications of the original Finsen light are in the hands of the profession, and some have partly achieved the end sought; though, for various reasons, they cannot be employed by the general practitioner. A very simple apparatus, and yet, one indicated in the treatment of many minor surgical affections, as well as effective in the treatment of lupus, appealing, therefore, to the general practitioner, is the Minin or Russian Violet light, which consists of a series of blue-violet incandescent lamps—not the ordinary bulb, pigment-dipped, but blown from the true colored glass—furnished with reflectors, for, as Freund says, concave mirrors serve to concentrate greater quantities of light than can be done with lenses.

In employing these rays, the light is placed at such a distance from the part to be exposed that the heat is barely felt, and the least increase in distance would cause the disappearance of the sensation entirely. This precaution is taken because, as noted by Finsen, light of lower frequencies, when concentrated, causes combustion of the tissues; and, too, it meets the objection offered by some authorities, that the effect is due to heat, and not to the actinic rays. This will be referred to later.

The size of the lamp used depends on that of the area to be treated and the nature of the affection. Exposures, given every day or every other day, are from ten to thirty minutes duration, according to the effect produced.

It has been shown that the Minin light possesses the following properties: (1) Anesthesia (2) hastening absorption of effusions; (3) producing regeneration of the skin with formation of but little scar tissue; (4) astringency. These are accompanied by a slight rise in temperature.

Minin demonstrated to his own satisfaction the anesthetic power in cases of gonorrheal arthritis, lacerations and other traumata. Allen, in his work on *Radiotherapy*—reporting three

minor operations performed painlessly under the influence of the Violet rays by Tracy, namely, removal of a sebaceous cyst from the scalp, a subcutaneous abscess from the thumb, and an inch square slough from the palm of the hand; and two by Brockbank, namely, suturing an incised wound of the forearm which had exposed the tendons, and removal of a fatty tumor from below the breast—suggests that as these lamps do not produce any ultra-violet rays and transmit a very small amount of violet and blue rays, the anesthesia was due to a strong mental effect.

On the other hand, Freund says that while the chemical or photographic efficacy of the incandescent lamp is slight, it may be materially increased by strengthening the current; and it is very evident that he is referring to the ordinary and not the blue violet bulb, which produces a perceptible fluorescence in kerosene oil and solution of quinine. It is also evident that Freund is dealing with lamps of low voltage, and not that obtained through commercial sources. Apropos, I have noticed that the comparatively new tantalum light causes a similar fluorescence, but in lower degree. If it could be furnished with blue-violet glass, it would provide a more efficacious therapeutic agent than does the ordinary lamp.

As to the absorption of the ultra-violet rays in the passage of light through glass, I again quote Freund, who says that "the favorable results obtained by Finsen with his old apparatus (glass lens and blue-light filters) are proof that it is not so very important that the irradiation should be with pure ultra-violet rays."

Recurring to the anesthesia, it is well to say that in some instances, instead of disappearing, the pain persists and may even increase after the first one or two treatments, but this is only temporary.

The absorptive effect of the rays was prettily shown in a case of gonorrheal bubo. Under their influence, within a week after incision healing had occurred, the discharge having ceased and the gland reduced markedly. While I have been told that in this affection, recovery may ensue in from ten days to two weeks, I have yet to see a case of my own in which less than three weeks were needed for what is usually regarded as a cure. I recall one which continued so long, that, in disgust, I asked a sur-

geon what must I next use to hasten recovery; his directions were short, for he replied "Patience."

An illustration of the regenerating influence of the violet rays is seen in the following instance: Young man had his scalp cut to the bone by a piece of falling slate. After the wound was cleaned as thoroughly as possible, it was sutured. When the patient was seen again, five days later, the scalp was found to be bulging. As the sutures were removed, pus exuded through some of the stitch holes. The wound was opened for a distance of an inch, and a quantity of pus welled out. After thorough washing, which brought out more slate particles, it was found that the skull was denuded of its periosteum for about a square inch. Gauze was inserted for drainage and the wound dressed. This proceeding was continued for two weeks when, but little improvement being manifest in the restoration of the periosteum, the Minin light was used. After a twenty-minute sitting, the drain was inserted and for the first time, unaccompanied by pain. Only two treatments more were necessary to cause complete regeneration of the periosteum, and the scalp wound was allowed to heal over.

The fact that under the influence of the Minin light we have a vaso-constriction instead of the hyperemia produced by the regular electric incandescent lamp, is evidence of the influence of some other energy.

At the present time, there is under observation a patient with tibial ulcer of five weeks' standing. Wet dressings with strapping were of little avail. After the third exposure to the violet rays of the Minin light there is a noticeable leveling of the edges and diminution in size. When the light is applied oozing ceases and the color is observed to change from a blue to a rosy red and then to pink. Pain has diminished considerably.

The healing process in a case of lupus is thus described by Minin: "We can observe first of all, the absorption of the infiltration in the edges and in the depth of the ulcer, creating the impression that the ulcer is leveling itself and becoming smaller. In the course of repeated phototherapeutic treatments, the ulceration covers itself each time with a kind of very thin membrane and becomes smaller; its

edges, covered again with a skin of normal color and elasticity, approach each other more and more and at last, are separated only by a cicatrix which completes the restitution of the tissues."

"If there exists a cicatrix in the place of a very extended ulceration, it will be very superficial and minimized," not one that "ties down the edges of the normal skin like a large ribbon penetrating all the layers of the integument."

Treatment with the violet rays is indicated for pain of all kinds, except in some cases of neuralgia. As mentioned, they may temporarily increase the pain. They are also indicated in ulcers; solutions of continuity of the skin with infection, the rays having a bactericidal action, though not so marked as either the Finsen or X-rays; in effusions; and chronic skin diseases including syphilides and tuberculides.

They are contraindicated in hysteria; and, in the case of young anemic girls, may induce that affection. Applications too frequent or too prolonged provoke general debility, which condition resulting from other diseases may be benefitted by properly directed applications of the rays. Some patients develop great fatigue while under their influence.

Minin states that it is dangerous to subject to them aged patients with arthritis of the extremities, because of the possibility of cerebral hemorrhage; and adds that he can offer no satisfactory explanation of this. Finally, they are contraindicated in all acute cutaneous eruptions.

As to general chromotherapy, Akopenko, quoted by Freund, says that the violet light is depressing. The mental attitude becomes melancholy, dreamy; after some time, headache is felt. The psychical processes are checked, and become very slow, whilst the feeling of general depression becomes almost unbearable. This statement is endorsed by many other investigators, and Ponza, trying it practically, noticed that persons affected with melancholia, after a short time (three to twenty-four hours) in the red room, become cheerful and chatty and were ready to take food, whilst the blue room had a quieting effect on maniacs who had previously required the straight-jacket.

THE PHYSIOLOGICAL ACTION OF ELECTRICAL CURRENTS—A BRIEF FOR THEIR INTELLIGENT USE IN THERAPEUTICS.*

By W. H. WALLACE, M. D., Brooklyn, N. Y.

For years when a paper on electricity has been read in medical meetings, a look of boredom or worse has been plainly seen on a considerable number of the members who were unable to escape the infliction. That much of this antagonism, or shall I say antipathy, has been deserved, I will not deny, for much of the discredit that has come on electro-therapeutics has been due to the absurd claims of rudimentary enthusiasts or to the manufacturers of apparatus who would guarantee you to cure anything under Heaven without knowledge if you only bought their special equipments. That time has not even yet passed but we are progressing.

Speaking recently with one of our most intelligent medical teachers in Brooklyn, he said: "Doctor, we do not deny the very great good often done by electrical currents, but you can't expect to get thinking men to have much faith in them 'till you show how they do their work; in other words, demonstrate their physiological action, explain their effect, if any, on metabolism and nerve tissues, and do away with empiricism; then, and not till then, will we sit up and take notice."

The purpose of this paper is to show somewhat of this action. As a matter of fact, I think we can demonstrate that the tissues of the body always respond to certain currents in the same way, which is not true of drugs, and I believe we can go farther than any drug therapist has ever gone in explaining the chemico-physiological action on living tissues. Comparisons are odious, but let us contrast the action of digitalis and static insulation, a current that many of our nerve specialists say has no action but psychic. It does not take much nerve to say that, for there be but few to refute it. My old teacher of therapeutics taught with much emphasis that the effect of digitalis was on the circulatory system, that it raised arterial pressure and slowed the heart; that the increased blood pressure was due to stimulation of cardiac ganglia and of the muscle fibers of the heart itself and that the slowing was due to

a stimulation of the pneumogastric nerve centers and the peripheral ends of the vagus. Now, that is a fair sample of drug technique as it is or was taught. Now, for our static insulation:

The patient being connected to the positive end of a static machine, and placed on an insulated platform, negative end of machine grounded, the machine is speeded up to generate a ten- or twelve-inch spark; you are literally pumping into that patient—mind, into, not through—hundreds of thousands of volts of electricity. This may produce a psychic effect, probably does, but it also produces a powerful physiological effect. The most marked of these are a reduction of arterial pressure, the slowing of the pulse, with relief of pain, if any. These effects are produced, I believe, by a sedative and stimulating effect on the vagus; the capillaries are dilated, oxygen is set free in the tissues and oxidation, or catabolism sets free waste to be carried off by the lymphatics, congestion is relieved, secretion and excretion are stimulated, simply because nascent oxygen is evolved about your electric terminals, and the system is bathed in it, and it is taken up by the blood and circulates as oxy-hemoglobin.

One of the reason the heart beats is because of the need of the tissues for oxygen. Here it is supplied without the intervention of the lungs, and the heart slows down, and the kidneys work overtime, and, in my experience, the specific gravity of the urine is always increased. Whatever may be the ultimate action, by which creatin is converted into urea, this much is assured: it is an oxidizing process, and whenever there is a deficiency of oxy-hemoglobin in the tissues, there will be a retention of some of the partly prepared elements of metabolism, and the cry of the tissues is for more oxygen, and nothing supplies it so quickly as high frequency, or static electricity.

Roughly, then, static insulation slows the heart, decreases blood pressure by stimulation of the vaso-motor system, and by supplying oxygen direct to the tissues, lessens the work of the heart, which slows because of the fact that part of its work and function is being done by the electricity.

When we come to high frequency currents,

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we have the same effect, but it is local, and more powerful to the particular part applied to, and the systemic effect is diminished in the same proportion. If you doubt that nascent oxygen is evolved around the patient, smell the hair after twenty minutes of the crown breeze, and I think you will be convinced, if you are familiar with the odor of ozone.

I will now take up the galvanic current, one that has been much neglected of late, while the faddists who run after new gods have been exploiting high frequency.

As to what galvanism is, we will not inquire. That it is a uni-directional force that readily lends itself to the use of man, is easily controlled, and very potent for good or evil, depending on knowledge of its action, is established fact. I wish here to contrast for you the two poles (after Neiswanger) of a galvanic battery, so that later, you may remember why we do certain things:

POSITIVE.	NEGATIVE.
Acid	Alkaline
Oxygen	Hydrogen
Stops bleeding	Increases bleeding
Sedative	Causes hypersensitiveness
Hardens tissue	Liquifies and disintegrates
Acid caustic	Alkaline caustic
Vaso Constrictor	Vaso dilator

From this you may readily see how the action of current varies according to which pole you use.

The average man associates electricity and pain almost unconsciously, and most doctors think that electricity is only of use in nerve troubles and to relieve pain. This is far from being the truth, but let us see how it does relieve.

Pain is a sensation due to pressure on a nerve, or to chemical irritation, or over stimulation of the nerve itself. We must remember that the normal tissues and fluids of the body are alkaline or neutral in reaction. Normal urine is acid in reaction. The processes of anabolism, or building up, then, is an alkaline one; the katabolism, or breaking down, is an acid one, as evidenced by the principles of waste. When something interferes with the nicely adjusted balance, you have a sharp cry (pain) from the affected part, and you may know that you have an excessive alkaline condition, the beginning of an inflammation pos-

sibly, certainly an interference with the evenly balanced scale of normality.

I think it is true that most of the faults of nutrition are not due to faulty building up so much as to lack of proper breaking down, or destruction of what has been absorbed, and proper oxidation and excretion lag behind instead of going hand-in-hand with absorption. Another point here is that through improper oxidation, organs are caused to excrete products that they were never intended to excrete; also, there is lost to the economy, building up products which a certain amount of physiological energy has been expended to convert them into almost assimilative form, but which at the last moment, for want of the ultimate oxidizing factor, were thrust out by protesting excretory organs.

Now, if it is granted that painful conditions are caused by, or are a sequence of, an excessive alkaline condition, it does not take a very clever head to see that the acid positive pole of the galvanic battery will relieve it, because it is an oxygen maker. It oxidizes the principles of waste, converts (locally) an alkaline condition to an acid one, and by its constrictive action on the vaso-motor nerves, lessens the amount of blood to the part till the temporary inflammation has subsided, and rest, nature's great restorer, completes what has been so well begun.

The negative pole, I will not discuss, because its action is exactly opposite to what has been described, and we use it mostly as a destructive agent. In passing, I will say that when used in careful hands, and in exact conformity with Newman's law, it is the one sure, safe, painless and bloodless method of curing strictures of the urethra.

The faradic current I will dismiss with but the statement that its effects are nearly altogether mechanical, and its indiscriminate use, both by the profession and the laity, has done more harm than good, and has done more to discredit electrotherapy than any other one thing. Properly used in certain cases of paralysis and atrophy, not going to the degree of producing painful contractures, it is useful, but probably less so than vibration or massage. The sedative and pain relieving quality we get from the so-called high tension faradic batteries is, I believe, due to nothing but a tiring

out of the muscle fibers from the rapid vibration to which they are subjected.

The sinusoidal current is one that very much may be expected from when we can get an apparatus that gives us the true sine wave. If there is one such on the market, I have yet to see it, but even with the imperfect current we now get, the regular oscillating from pole to pole sets up a stimulation that hastens the regeneration of paralyzed nerves more than any other current or method with which I am acquainted. I have had some remarkable results in optic atrophy, using the combined sinusoidal and high frequency currents, but I have not had a large enough series of cases to report on as yet.

Several doctors have united to give electricity a black eye with the profession. One is, as I have stated, that over zealous enthusiasts have heralded it as a panacea for all the ills to which man is heir. Others with insufficient training and no knowledge of technique got no results, or possibly did harm. It requires a considerable outlay for apparatus; its field is mostly in chronic cases that take weeks or months of treatment, and it is not always possible to hold patients. Each treatment must be at least half an hour, and sometimes an hour, and, except a man devotes himself to that line of work and is paid in proportion, he cannot afford to spend the time. Anyone who gives less than fifteen minutes of static insulation might as well give none. If you have not time to devote to your patient, don't give it at all, and if you have not a definite knowledge of the pathological condition, you are going to try and relieve, and a knowledge of what you expect your current to do, leave it alone. Correct treatment can only be based on careful diagnosis.

To recapitulate, then, electricity is but a means of changing and hastening chemical reactions in the system, just as it does out of the system. If they can (and they do) hasten the process of tanning hides by electric currents, certainly you can hasten the transformation of creatin into urea in the system, and hasten the other processes of metabolism and catabolism.

We should never forget that electricity is a form of molecular activity, and very potent for good or evil, and though it has well defined

limitations, it is the greatest oxidizing agent ever used in therapeutics.

196 Prospect Park, W.

THE VALUE OF THE X-RAYS IN CHEST DIAGNOSIS.*

By A. L. GRAY, M. D., Richmond, Va.
Professor of Physiology, University College of Medicine; In charge of X-Ray Department, and Visiting Physician, Virginia Hospital.

In the determination of conditions existing within the thorax, every procedure that will add to our very imperfect methods should be accorded a most hearty welcome.

While there are specialists who can, after years of the most assiduous application and wide experience in chest examinations, recognize very slight abnormalities with a wonderful degree of accuracy, such men are rare, and often their findings are not treated with the respect due them, for the reason that the doctor referring the case, is not sufficiently trained in physical diagnosis, and cannot, himself, detect the points elicited by the chest specialist.

There are conditions that, by reason of their size and location, even the most skilled physical diagnostician cannot possibly ascertain, while their recognition at the onset may mean the arrest of the disease before it is beyond control.

It is my desire to call to your attention the applications of the X-Rays as an aid in discovering with accuracy points difficult or impossible of demonstration otherwise.

Thoracic Aneurysms.—Although an early diagnosis rarely, if ever, enables a complete cure to be effected, the patient's habits of living may be so modified and treatment so instituted in consequence thereof, that life may be prolonged or even the progress of the aneurysm arrested.

A thoracic aneurysm found by the X-rays in a woman in the sixth month of pregnancy, caused me to advise the induction of miscarriage. The operation was successfully performed and the patient spared a probable sudden death during labor.

Aneurysms have been often found when their existence had never been suspected, and the radiograph was made for an entirely different reason.

*Read before the Medical Society of Virginia at its Thirty-Ninth Annual Meeting, held in Richmond, October 20-23, 1908.

Pain in the region of the large blood vessels, persistent aphonia, huskiness of the voice, bronchorrhoea, areas of deep-seated tenderness near the sternal or in the intrascapular regions, when the cause is not clear, should always be suggestive of thoracic aneurysm.

Pleuritic Effusions.—Though these are usually easy of diagnosis, they are sometimes very difficult.

It has been my fortune to test the utility of the X-rays in a considerable number of cases of hydrothorax and pyothorax, and in a single case of hæmothorax, the result of a bullet wound.

In hydrothorax, which is the most common of these, the level of the fluid, if it is not walled off, shows distinctly in the radiograph, usually as a fairly sharp defined line above which are the shadows of more or less normal lung tissue, while below is the denser and more diffused shadow due to the greater difficulty encountered by the X-rays in penetrating the fluid. The ribs appear much less distinct.

In localized pleuritic effusion, where adhesions have formed a distinct wall which encloses the fluid, the thickened pleura, as well as the fluid, are generally easily recognized. If the effusion is great, there appears in the lung tissue itself, especially in that portion near the fluid, an increased density due to compression.

What has been said of hydrothorax may likewise be said of empyema, except that the pus shadow is more dense than in hydrothorax, and often the shadows of the ribs are entirely obliterated.

Pneumothorax is readily determined by the absence at the site of the air, of even the normal shadow of the lung.

Abscesses within the lungs are distinguishable by appearing as very dense, generally single areas shading off into the surrounding lung tissue.

A difficulty which occasionally presents itself is the risk that the patient may undergo in being placed in the upright position necessary in diagnosing general effusions. Rarely indeed will a case be seen in which the danger would be too great to permit the sitting posture in bed for the short time necessary to take the picture. Such a condition, however, does sometime occur and renders the diagnosis of free fluid quite difficult.

Tumors and Enlarged Glands.—Tumors of the lung tissue generally produce dense, often sharply defined areas of more or less irregular outline, not infrequently multilocular. They may be distinguished from abscesses, which they most resemble, by the absence of fever, and by the result of a blood examination.

Mediastinal and bronchial glands appear as rounded or oval shadows with clear cut borders. They may, if large, be mistaken for small aneurysms, and must be distinguished, if there is doubt, by fluoroscopic examination, when the expansile pulsations may be seen.

Tuberculosis.—It is in tuberculosis that the X-rays have begun to open a new field. X-ray operators everywhere have in the last few years turned their special attention to the early recognition of this disease by radiographs. Many cases have been reported in which the chest specialist has failed to determine any physical signs—long before the appearance of the bacilli in the sputa—in which an unqualified diagnosis of pulmonary tuberculosis was made and the subsequent course of the disease verified the findings.

With the present almost instantaneous work that the recent machines are capable of doing, an exposure may be made while the breath is held and the smallest area of consolidation will appear distinctly on the picture. Isolated tubercles, minute calcified glands and thickening at the roots of the lungs can be clearly demonstrated. In advanced tuberculosis in which there is considerable consolidation, the areas may be studied and progress or recession of the disease determined by comparing radiographs made from time to time. Cavities in the lungs, their size, location, and whether or not they are being walled off are all points that may be shown by a good radiograph.

In chest examinations for tuberculosis it is not sufficient, as is often done, to make a single picture with the plate behind the thorax, for images of small solid areas in the anterior portion of the lungs, may be indistinct by reason of their distance from the plate.

In order to obtain a clear impression, it is of equal importance that a picture be made with the plate in front.

Restricted motion to the diaphragm on the affected side, (Williams' sign) which was formerly considered of great value in the diagnosis

of early tuberculosis, has proven to be unreliable. This is easily demonstrable by an X-ray examination, but is not always present in the earliest manifestations.

The heart may also be outlined, and its size and position ascertained. This is best done by the employment of the ortho-diagraph, which also enables the diaphragm and other structures to be most accurately charted.

The location of foreign bodies in the œsophagus and respiratory passages is of such frequent occurrence as to require no comment in this necessarily brief paper.

312 East Franklin Street.

THE X-RAY IN THE TREATMENT OF SKIN DISEASES.*

By THOMAS W. MURRELL, M. D., Richmond, Va.
Lecturer on Dermatology and Syphilis, University
College of Medicine, etc.

The X-Ray at this time is an accepted and established branch of the methods of treating disease, and is no doubt one of the most powerful single agents at our command. However, it is not my purpose to act in the capacity of an attorney for the X-Ray, for there is no need of one, but there is need of a judge.

A technical discussion of the X-Ray produces one of two effects on the average doctor; I do not mean average in intellect, but that wonderful man, who must be ready to lay a thousand different arrows to his bow to meet a thousand ills. Under the battery fire of technical obscurities, either he soon loses interest, and the discussion sweeping over him passes on like the incoming tide; or, should he ride the crest of the wave, he is awed at the possible miracles of the future.

We are only on the threshold of great works that will be consummated when we learn the entire biological effects of the ray. But can we wait? Our patients live to-day, and it is to-day that we must treat them.

Admitting that our present knowledge is imperfect, yet it has grown great enough to eliminate the X-Ray from the field of the faddist and the hands of the empiricist. It has a fairly well defined action, and should be used only when that action is desired. Even staid dry-as-dust doctors seem ready to believe in

fairies and magic, and would like to regard the greenish globe as something possessing occult powers, but, in the largest sense, there is only one action in the X-Rays, and, in a word, that is *destructive*.

Like all other destructive agents, in its mildest application, only a slight stimulation will be produced; carried further, atrophy of gland tissue results, and still further, loss of tissue, the dreaded X-Ray burn.

The proper status of any case must be determined by consideration of authorities and personal evidence, and I wish, first, to look into the field of radiography, then dermatology, and, finally, cite a few cases with deductions therefrom. It is not enough to know that the X-Ray will cure; we should know whether it is better than other methods. There are dangers in this wonderful light, and these dangers can only be guarded against by a special technique. If a salve will do as well, it is our duty to use it, for when the choice of methods lies in the balance, the doctor should consider not only the patient's welfare, but his convenience as well.

In the earlier days of the X-Ray it was tried on nearly every condition, and most books that have been published on radiography are clinical in character. They are the collected reports of different men, published in journals and hospital reports, and in the great majority of cases, are decidedly partisan. That is, they are all from the X-Ray standpoint, and written to prove a single value, and not a comparative value. For these reasons, such communications are of much more value in a work on radiography than one on dermatology.

In a persusal of three standard authorities on radiography, I found agreement and recommendation of the ray in the treatment of fourteen different diseases, named in the order of their recommendation. They are as follows:

1. Malignant degenerations and growths;
2. Acne Vulgaris; 3. Sycosis Vulgaris; 4. Lupus Vulgaris; 5. Tineas; 6. Psoriasis; 7. Acne Rosacea; 8. Eczema; 9. Lupus Erythematosus; 10. Hyperidrosis; 11. Hypertrichiosis; 12. Alopecia Areata; 13. Naevi; 14. Keloid.

From the dermatological side of the question, I have consulted English, French and American authorities. In all malignant degenerations and growths of the skin from the borderland ulcer of Keratosis Senilis to the or-

*Read before the thirty-ninth annual session of the Medical Society of Virginia, at Richmond, October 20-23, 1908.

inary forms of Epithelioma the X-Ray is hailed as chief.

Acne Vulgaris.—Two regard it as the best local treatment, while others regard it as a valuable measure to be used as a last resort.

Sycosis Vulgaris.—Only one regards it otherwise than an epilating agent. All caution against complete alopecia resulting.

Lupus Vulgaris.—Here the X-Ray receives universal praise.

Tineas.—Only to be regarded as an epilating agent, though the most thorough one possible.

Psoriasis.—The efficiency of the Ray in getting rid of the eruption is admitted, but it is recommended to be confined to isolated groupings and those cases, especially rebellious to other treatments. As this disease nearly always recurs, the X-Ray must be used most carefully not to produce harm.

Acne Rosacea.—Only benefitted when used as a local treatment.

Eczema.—Benefitted when the case is chronic and there is much induration.

Lupus Erythematosus.—Very rebellious. The X-Ray here is second to the Finsen light, but superior to other local treatments.

Hyperidrosis.—Benefitted, but atrophic scarring the result.

Hypertrichiosis.—Can be permanently cured but the danger of a treatment long enough to produce permanent and complete alopecia balances its advantages.

Alopecia Areata, Naevi, Keloid.—Results not satisfactory enough to commend it when compared with other recognized methods.

In the past year I have treated cases of nine out of the fourteen diseases mentioned. These treatments have not been, in all the cases, entirely limited to the X-Ray as my efforts have been to effect a cure and not obtain statistics.

In malignant degenerations and growths, my success has been in line with other workers. Not only has the X-Ray effected cures but almost immediate relief from pain, the case allowed to be ambulatory, and the ability to give any necessary after treatment makes it an ideal method.

In three cases of sycosis vulgaris I have attempted to produce a permanent alopecia because this was preferable to the recurring attacks. I do not believe the pus organisms were

affected by the ray, because the disease would invariably appears upon the return of the hair.

One case of Tinea was permanently cured by one thorough epilation.

Of psoriasis I have treated four cases. These have all recurred. The scales rapidly diminish and fade but the individual reaction is very hard to estimate. Over stimulation certainly does harm and the proper amount of radiation is an unknown quantity. I have not found that the X-Ray is better than other methods except to get rid of the scales. This it does more quickly.

Lupus vulgaris in two cases has answered well to treatment though subject to relapses in spots. These relapses have never involved the whole area; a cure finally resulting.

Six cases of acne vulgaris have done splendidly when the X-Ray was used as part of a local treatment; especially in acne involving the deeper layers of the skin and covering large areas. Mild stimulation has been sufficient in ordinary acne of the face, but in necrotic acne of the back I have produced erythema. The X-Ray will not remove pus, however, and in all these cases, it has been used only as a stimulant and atrophier of the sebaceous glands.

Two cases of acne rosacea have been benefitted by a mild stimulation, but here, unquestionably, the main results were due to internal medicine.

Two cases of lupus erythematosus have been greatly benefitted, which is more than anything else had ever done, and one case of keloid was completely negative.

Two cases of eczema were benefitted; both of these were chronic, much indurated, the patients taking internal treatment while the X-Ray was used as a local measure.

CONCLUSIONS.

The X-Ray is a dangerous remedy, and should be used only by one who is familiar with its technique and only a definitely superior measure or a last resort.

In malignant degenerations, lupus vulgaris, lupus erythematosus it is a premier treatment.

In psoriasis, it is a doubtful measure.

In sycosis vulgaris, it is of great value when permanent alopecia is desired.

In the tineas, it is more thorough than mechanical epilation but not absolutely necessary.

In acne, it is a valuable local treatment but only one method of local treatment.

In hyperidrosis and hypertrichiosis, it is a last resort.

In keloid and alopecia areata, it is unqualifiedly inferior to other methods.

13 E. Grace Street.

Correspondence.

Young Human Embryos Wanted at University of Virginia.

Mr. Editor:

The undersigned solicits the co-operation of the medical practitioners of the State of Virginia in an attempt to establish at the University of Virginia a working collection of young human embryos both normal and pathological. The science of human embryology still presents numerous gaps, while the science of teratology, particularly as regards the experimental aspect, has just begun. Practicing physicians can be of great service in the further development of these sciences; and each acquisition to the sum of theoretical knowledge will revert an additional power and influence to the doctors of the country. Aware of the keen scientific interest, the progressive spirit and the kindly courtesy of Virginia medical men, I am hopeful that much useful material will accrue to my present small collection as the result of a mere statement of our need.

One of the main points which requires more accurate determination is the age of very young embryos. It is of the utmost importance, then, that the doctors obtain as complete a history as possible regarding a particular aborted ovum or teratoma, *i. e.*, exact time of coitus, last menstrual period, etc. It is also of prime moment that the ovum or embryo be preserved as soon as possible after abortion. For preservation a 10 per cent. solution of formalin is convenient and for our purpose quite satisfactory. The ovum should not be opened nor allowed to suffer trauma, but should be forwarded at once in the formalin solution.

Very young ova are apt to escape the notice of physicians indifferent to their possible presence. I hope that more careful watch will be kept for *very* young ova. The youngest hu-

man ovum now known, namely, the Boyce-Teacher ovum, measuring only 2.4 mm. x 1.8 mm., was found in a piece of decidua sent to these men for experimentation in a mixture of urine and blood clots. All that the physician could recognize was a piece of "fawn-colored membrane" among the blood clots which were believed to be merely a portion of the decidua of pregnancy. The embryo itself was about the size of a pin head, but its careful study has settled several very important points concerning human embryology, and has compelled changes respecting the ages of some of the previously known early embryos. All fragments of endometrium and shreds of membrane should be carefully examined in suspicious cases.

Hearty co-operation with our ambition will receive sincere personal appreciation, and, it is hoped, may result in useful addition to medical knowledge.

H. E. JORDAN, M. D.,
Adjunct Professor of Anatomy,
University of Virginia.

Book Notices.

International Clinics, a Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles, etc., by leading members of the medical profession throughout the world. Edited by W. T. LONGCOPE, M. D., Philadelphia. Vol. III. 18th series. 1908. Cloth, 8vo, 298 pages. Philadelphia and London. J. B. Lippincott Co. 1908.

This volume has chapters on Treatment, Medicine, Surgery, Gynecology, Pediatrics, Orthopedics, Psychiatry, Neurology, Ophthalmology, Rhinology and Pathology. The work is illustrated by engravings and diagrams wherever essential. It contains its usual fulness of original observations, and is well worth the annual subscription of all practitioners of medicine, surgery or specialties.

Manual of Diseases of the Nose and Throat. By CORNELIUS GODFREY COAKLEY, A. M., M. D., Professor of Laryngology, University and Bellevue Hospital Medical College, etc. Fourth edition Revised and enlarged. Illustrated with 126 engravings and seven colored plates. Lea & Febiger. New York and Philadelphia. 1908. 12mo. 604 pages. Cloth, \$2.75 net.

Coakley's *Manual* has rapidly advanced to the forefront of books wanted by the student, specialist and general practitioner. Theoretic

discussions are for the most part omitted, and so is Bibliography, in order that all the space possible may be given to the consideration of the more practical questions of causation, diagnosis, prognosis and treatment. Beside the numerous prescriptions given throughout the text, a special chapter has been added to this edition on "Therapeutics, Remedies for the Local Treatment of the Nose, Pharynx and Larynx."

Practical Points in Anesthesia. By FREDERICK-EMIL NEEF, B. S., B. L., M. L., M. D., New York City. New York. Surgery Publishing Co. 1908. 12mo. 51 pages. Cloth.

This is a neatly issued little book on anesthesia, with marginal captions in red print. It deals specially with ether, chloroform and ethyl chloride and "anesthol—a fairly stable combination of chloroform, ether and ethylchloride in molecular proportions" which is given by the drop method. The book can be read in an hour. Except the reference to "anesthol," we find in this brochure nothing that has not time and again been well said.

Systematic Treatise on Materia Medica and Therapeutics, with Reference to the Most Direct Action of Drugs. By FINLEY ELLINGWOOD, M. D., Formerly Professor of Materia Medica, Bennett Medical College, etc. With a Condensed Consideration of Pharmacy and Pharmacognosy, by PROF. JOHN URI LLOYD, Ph. M., Ph. D., etc. Sixth edition. Thoroughly revised and greatly enlarged. The Ellingwood's Therapist Co., Chicago. 1907. 8vo. 811 pages. Cloth.

This treatise is perhaps the standard one of Eclectic School of practice on the action and uses of indigenous drugs. The old time "Thomsonian" doctor of other days in this section of country would have rejoiced had they had such a book for study and reference. Indeed, it is a valuable book now—dealing more especially with indigenous drugs—giving in detail their botanical description, physiological action and therapy. For the practitioner of any school of practice, where medicines derived from the vegetable kingdom are needed, this book will prove most helpful. As a rule, perhaps, most doctors are becoming more and more wedded to the alkaloids; but when the action of the entire vegetable drug is needed, the fluid extracts are to be preferred. There is no reason

whatsoever why regular doctors may not adopt this as a guide book in the use of indigenous drugs. A short chapter on electro-therapeutics is added. The book contains much valuable and daily useful information. It is well indexed as to the drugs, and also as to the diseases or symptoms in which these drugs are specially beneficial.

Editorial.

The Southwest Virginia Medical Society

Held its fourteenth semi-annual meeting at Bristol, Va.-Tenn., December 3-4, 1908. The interest taken by members in these meetings is evidenced, not only by the large attendance from the great Southwest section of the State, but by the presence of many leading men from a distance. This last meeting proved no exception, unless, possibly, it was better than before.

The afternoon session of the first day was devoted largely to the Symposium on Pneumonia—the same subject as that selected by the Medical Society of Virginia for its Roanoke meeting—and the paper read by Dr. A. B. Greiner, of Rural Retreat, dealt with its Pathology and Symptomology, while Dr. J. H. Dunkley of Saltville, gave attention to the Diagnosis and Treatment. The night session was open to the public, Dr. E. C. Levy, Chief Health Officer of Richmond, addressing the audience, with stereopticon illustrations, on Water and Milk Supply, and Some Common Sources of Contagion.

Others listed on the program for papers were Drs. W. S. Slicer, Cripple Creek; A. F. Horne, Glade Spring; S. Strouse, Baltimore; Stuart McGuire, Richmond; R. M. Wiley and J. C. Darden, Salem; C. P. Fox, Greenville, Tenn.; George Ben Johnston, Richmond; J. M. Phipps, Rural Retreat; S. M. Miller, Knoxville; Stephen H. Watts, Charlottesville; L. G. Pedigo, Roanoke; W. H. Cassell, Wytheville; J. M. Shackelford, Martinsville; W. L. Powell, Roanoke; Hugh H. Trout, Roanoke; S. R. Miller, Knoxville; B. D. Bosworth, Knoxville; M. B. St. John, Bristol; and W. R. Rogers, Bristol.

An enjoyable feature of the occasion was the

luncheon served to the visiting physicians and guests by the wives of the Bristol members. Dr. P. B. Green, of Wytheville, is President of this prosperous Society, and Dr. A. B. Greiner, of Rural Retreat, is Secretary. Marion, Va., will be the next place of meeting.

The Seaboard Medical Association of Virginia and North Carolina

Held its thirteenth meeting at Washington, N. C., December 1-2, 1908, a large attendance of members being present from both States. The President, Dr. A. K. Tayloe, addressed the Association on the subject, "Thoughts of the History of the Revolution of Medicine and Surgery as a Science." After the President's address came the annual oration by Dr. J. R. Speight, of Norfolk, on the subject, "The Southern Doctors and the Part They Have Taken in the Progress of Medicine."

Papers were read by Drs. E. S. Taliaferro, of Norfolk, Va.; J. Allison Hodges, of Richmond, Va.; L. S. Foster, of Norfolk, Va.; Drs. Gwathmey and Ruffin, of Norfolk; C. L. Prigden, of Kingston, N. C.; J. A. Ackerman of Wilmington, N. C.; Southgate Leigh, of Norfolk; Hugh M. Taylor, of Richmond, Va.; Lucien Lofton, of Emporia, Va.; W. H. Dixon, of Edward, N. C.; J. M. Parrott, of Kinston, N. C.; A. K. Tayloe, of Washington, N. C.; P. St. L. Moncure, of Norfolk, Va.; R. L. Payne, Jr., of Norfolk; C. D. Jackson, of Yatesville, N. C., and A. D. Parrott of Kinston.

At the night session on the second day, a public meeting was held in Brown's opera house, at which "A Short Talk on Sanitation" was given by Dr. J. H. Small. "Tuberculosis" was the subject of a lecture illustrated with the reflectoscope by Dr. C. P. Wertenbaker, of the United States Public Health and Marine Hospital Service, after which the doctors were given a banquet in the Hotel Louise.

Dr. Southgate Leigh, of Norfolk, Va., was unanimously elected President for the coming year, and Norfolk was selected as place for the next meeting.

Sterilization of Chronic Convicts.

With the advances of civilization and the adoption of more humanitarian views with

reference to the care and surroundings of "jail birds" and penitentiary convicts, there would likewise appear to be a constant increase of criminality throughout the country. In view of the efforts of those in charge of reformatory institutions, and those who undertake the uplifting of the moral stamina of those confined in prisons, such a fact seems surprising. While of course reclamations are already being made by such efforts of truly Christian workers—and even enough to further encourage them in this direction—there is yet left a large class of chronic criminals with a singular amount of hereditary inclination, who are not bettered by the punishment of imprisonment, but who only patiently await the termination of their sentences, to go out in the world to repeat their offences.

The paper in this issue by Dr. Chas. V. Carrington, for many years Surgeon to the Virginia State Penitentiary, on "Sterilization of Habitual Criminals" forcibly presents facts which are worthy of careful consideration. It is true his experience in his experimental operations at practically unsexing the convicts has been limited, but the results have been suggestive of enough to warrant further study in this direction. Any such means that may tend to reform the moral nature of convicts, and that may save the public from further depredations by this class of chronic criminals when set free by the limitations of their imprisonment, would seem justifiable. The treatment spoken of can scarcely be considered as punitive beyond the law, if real, permanent good to the convict and to the public is to be the result. We commend the careful reading of this paper to all concerned in the stable reformation of chronic criminals. Of course, further observations are necessary to confirm the suggestions made by Dr. Carrington.

Virginia to be Asked for Appropriation to Prevent Tuberculosis.

An informal meeting of the Virginia Delegates to the International Congress on Tuberculosis was held in the National Museum, Washington, D. C., October 2, 1908.

Dr. S. T. A. Kent, of Halifax County, was elected chairman, and Dr. B. C. Keister of Roanoke, was elected secretary. After brief remarks by Drs. Kent, Anderson, Grandy and

others in reference to the objects and importance of the meeting, the following resolution was adopted:

Resolved, that it is the sense of this meeting that the State of Virginia should be as liberal as funds will admit in appropriating to, and aiding the efforts of the Medical Profession in its fight against tuberculosis.

It was further moved and adopted that this organization shall be known as "The Virginia Provisional Organization on Tuberculosis."

It was moved and carried that a committee of five be appointed to devise suitable plans for the future government of this organization. (Committee not named at the time.)

The meeting adjourned to meet in the city of Richmond during the next Convention of the Medical Society of Virginia, in the month of October.

B. C. KEISTER, SECRETARY.

[This communication was received too late for any definite action by the Medical Society of Virginia.—*Editor.*]

The Military Surgeon,

The Journal of the Association of Military Surgeons of the United States, heretofore published at Carlisle, Penn., will henceforth be published at Richmond, Va., to which place the Secretary has moved his office. The Editor, Major James Evelyn Pilcher, Brigade Surgeon of U. S. Volunteers, and Captain, Retired, in the U. S. Army, and who is also permanent Secretary of the Association, says editorially: * * * "The increasing membership of the Association renders a more central and accessible location desirable for more efficient conduct of its work, which will also be materially advanced by the facilities of a larger city. These reasons, together with certain personal considerations, have been the compelling factors which have brought about this movement." * * * The Journal is essentially for the military surgeon, though it always has something to interest the general practitioner.

Medical Examining Board of Virginia.

This Board will meet at Lynchburg, Va., Tuesday, December 15, for the arrangement of examinations of applicants for practice of medicine, etc., in Virginia. Examinations will

begin promptly at 9 A. M., Wednesday, December 16, and will continue through Friday, December 18. There are nine sections, each of which is entitled to three hours. For more detailed information, see advertising page 20 of this issue of this journal.

The Elizabeth City County Medical Society,

At its recent semi-monthly meeting, held at Hampton, Va., elected the following officers for the ensuing year: President, Dr. W. A. Plecker, and Secretary, Dr. George W. McAllister, both of Hampton.

The Virginia State Board of Health

Has purchased Red Sulphur Springs, together with a surrounding farm and wood-land of approximately five hundred acres. The price paid was \$17,500. The place will be fitted up as speedily as possible for the care and treatment of Virginia's heretofore much neglected consumptive patients.

The National Association for the Study of Epilepsy and the Care of Epileptics,

At its recent meeting, elected Dr. Wm. F. Drewry, of Petersburg, Va., President for the ensuing year. The meeting next Fall will be held either in Baltimore or Chicago, though this question is yet unsettled.

Dr. C. S. Venable,

Formerly of the University of Virginia, is now located at San Antonio, Texas, where he has opened a private Surgical Hospital. This Spring past he went to Baltimore, where he was associated with Dr. Finney. This Fall he received the appointment as Surgeon to the West Texas Military Academy, at San Antonio.

Practitioners' Visiting List, 1909.

Published by Messrs. Lea & Febiger, Philadelphia and New York, has a flexible cover, tuck, pocket and pencil, and is arranged for 30 patients weekly. Besides a number of useful tables, it gives reminder of urinalysis—how to examine and meaning of findings, a list of important incompatibilities, poisons and antidotes, emergency memoranda, dose table, etc. Price by mail, \$1.25; thumb letter index, 25 cents extra.

THE Virginia Medical Semi-Monthly.

(FORMERLY VIRGINIA MEDICAL MONTHLY.)

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Whole No. 306.

RICHMOND, VA., DECEMBER 25, 1908.

\$2 00 a Year.
10 Cents a Copy.

Original Communications.

THE MEDICAL PROFESSION AS REPRESENTED IN THE UNITED STATES NAVY.*

By PRESLEY M. RIXEY, M. D., Washington, D. C.
Surgeon General of the U. S. Navy.

It is a peculiar pleasure to be here to-day among my professional brethren of my native State, and to tell you of the Medical Profession as represented in the U. S. Navy. It is represented by 350 medical graduates divided between the various grades, from the ranking Chief of the Medical Corps to that of Acting Assistant Surgeon. Each member of this branch of the service should be more than ordinarily expert, as by a board of specially selected medical officers of the Navy he is chosen from among the graduates of our best medical colleges. (The proportion of candidates who are successful is one to four, and this alone indicates the high standing of attainment which is required).

After the entrance examination, the young graduates are ordered on duty in hospitals until the beginning of the next session of the Naval Medical School, where the fullest preparation can be made for their future career as naval medical officers. The course extends over a period of six months and looks to the preparation of the young medical officer for his subsequent duties, peculiar and distinct in many respects from the work of his civil colleagues. It is essentially practical in character and includes special attention to tropical medicine, bacteriology and other laboratory work, naval surgery, instruction in signals and drills, the discipline and customs of the service ashore or afloat, uniforms and sidearms, together with the manner of using them—in short, everything that is necessary to a proper

familiarity with the purely professional and military aspect of a naval medical officer's career. When they have completed this course, the young officers make their first cruise.

The professional opportunities for naval medical officers are liberal and broad, and of a character amply gratifying to ambition, both in point of pathological material and means of diagnosis and treatment, and, also in matters of sanitation and scientific investigation. While harmonious action and general efficiency in the Corps is of prime importance, individual merit is thoroughly appreciated and all original investigation, or any initiative in meritorious directions, is encouraged and facilitated. In addition to the professional opportunities at the various naval stations at home and beyond the continental limits of the United States, medical officers enjoy the enlightening advantages of broad travel and opportunity to see and study the diseases of every climate and part of the world. They come in contact with their professional colleagues of every nation and are constantly placed in a position to observe the methods of practice in new medical and surgical fields.

A doctor enters the service as an acting assistant surgeon, and on the first day of October following he is ordered to the Naval Medical School for a period of six months. At the expiration of this tour of duty, the whole class is examined for the position of assistant surgeon; the standing of each in the class during the school term is taken into consideration and fixes his standing in relation to the officers of the corps for all times, so far as rank and pay is concerned. The only chance of the status of an officer being changed is by special act of Congress, or Court Martial.

Three years from the date of his commission as assistant surgeon an officer is entitled to promotion if found qualified physically, mentally and morally. After this, promotion takes place

*Read by invitation before the Thirty-Ninth Annual Session of the Medical Society of Vir. Infa. held at Richmond, October 20-23, 1908.

as vacancies occur in the higher grades, and preliminary to every promotion there is a professional and physical examination to determine the fitness of the particular officer, the basic requirements of which are that the officer shall keep abreast with his profession in every essential line of its progress and with the changing conditions in service development. The naval medical profession under seagoing conditions and environments, and among seafaring people, and the members of the profession who are devoted or are devoting their careers to this sphere of activity, have long formed the subjects of interesting articles, and it owes its existence to the daring spirit of adventure and the progress of navigation in early modern times; but the regular establishment of a medical department as a distinct feature of the organization of ships may be properly accredited to "a later period, when, in consequence of the jealousy of European nations, with respect to their commercial and colonial possessions, warlike disputes at sea became frequent between them." Thus the calamities of war were added to the already existing inconveniences and actual distress from disease and injury in and of a character peculiar to ship life.

The appointment of surgeons to ships now became necessary, and the government of each country, having maritime concerns, realized the desirability, for humane and economic reasons, of making suitable provision for this new branch of practice. The improvement in naval tactics, the increased size of ships, and greater length of voyages, as compared with ancient and mediæval times, naturally led to it. Moreover, the longer cruises upon which ships began to venture carried the seamen into strange and trying climes and exposed them to new and unknown diseases. And again, the development of the art and implements of war by land and sea was attended by improvements in the methods of destruction, and, in consequence of the increased danger to health, life and limb, the surgeon became an indispensable appendage to the ship, and naval establishments as important fields for medical work as military establishments or civil communities. The beginning was humble and the development slow and not uninterrupted; but, through the various disheartening vicissitudes, representatives of the profession who had chosen the sea as the

theatre of their careers, exhibited a self-sacrificing loyalty to humanitarian appeals and a dogged determination to win their legitimate position. A foreseen destiny was the only encouragement. The appointment of naval surgeons in European countries seems to have been made at a very early period, but, owing to the poor condition of the marine and the very puerile nature of sea engagements at that time, their position was trifling and regarded with contempt. The life of these pioneer representatives of our great profession in naval service was far from enviable, and their devotion to their calling under such trying conditions should make them heroic in our eyes for what they endured. The crudeness of their provisions and the difficulties under which they worked are graphically depicted in the following historical note concerning preparation for battle:—

"First See that your Allopp, or Platform be laid as even as possible, with a Sail spread smooth upon it; which you must speak to the Commander to Order. In Merchantmen the Chyrurgeon's Place is usually in the Cable Tier between Decks; but in Men of War 'tis in the Hold abaft the mast, between that and the Bulk-head of the Cock-pit from side to side.

"In the Place you must have two Chests to set your wounded Men on to dress them.

"And at the Corner of the Platform you are to place two Vessels, one with water to wash Hands in between each Operation, and to wet your dismembering Bladders in, and for other Services; and the other to throw amputated Limbs into, till you have opportunity to heave them overboard. You must likewise place good store of Lights about the Platform, in Lanthorns; but two of the largest (without Lanthorns) in the place where you are to operate.

"You must have there in readiness your Instruments both large and small, and your first intentions must now be there ready, with your Restraining Powders, Rowlers, Linen, Cross Bolsters, Tow, Acetum, Ova, broad Tape to make Ligature, and narrow to bind on splinters (for Apparel for fractures must not now be missing); also Basons to mix your Restrictive in, Pannikins to warm your Oyls in, and to dissolve your cerots (which can be done over your large candles): have likewise your Cor-

dial Bottle ready at hand to relieve men when they faint.

"And your Surgery Chest must not be far from you, least you should have occasion for anything therein; as the Traumaties, other Vulneraries.

"And now being thus accommodated, you are in competent readiness for wounded men when they shall be brought down."

Beginning with such primitive provisions for the bare necessities in accommodations and supplies for the sick, and the humiliating position of the ship's surgeon as depicted by Smollett in "The Adventures of Roderich Random," the change has come. But it is a far cry from early conditions to the present splendid advance of medical science and its mode of application in the naval service.

It is interesting to note that the history of the profession in the Navy of the United States began in Virginia, where, as early as 1775, the opportunity for identification with sea life took place naturally, in consequence of the first attempt to develop the American Navy into a distinct arm of the national defense. At this time, foreseeing the coming struggle with the mother country, the House of Burgesses of Virginia appointed a Board of Naval Commissioners who adopted a plan for the creation of a naval force which, though at this time the merchant marine were not usually provided with doctors, included the commissioning of naval surgeons—men who, in lieu of any medical college in America, had been forced to go abroad to the universities of Edinburgh or Cambridge to obtain a diploma. It was after this, though but a short interval of time, that the naval force of the New England States were organized along similar lines for the national defense.

The opening in the Navy of the United States, thus offered to the profession, took place at a time when naval warfare was a much more advanced art, and the position of naval surgeons was comparatively assured and important. Nevertheless, the status of our early predecessors was equivocal; their accommodation a concession, a courtesy, a makeshift; and their equipment provided by themselves, so that it may be readily understood that the character and quality and quantity, varied materially. Indeed, as late as 1798, the regulations pre-

scribed that "a convenient place be set apart for sick or hurt men to which they are to be removed with their hammocks and bedding when the surgeon shall advise the same and some of the crew appointed to attend them." But, in spite of all, they accomplished a great deal of splendid work and needed not to hide behind excuses then, nor the support of a patronizing charity which we might be tempted to bestow now, in the light of present knowledge. The official and historical records are rife with laudatory and honorable mention of naval medical officers, which go far to express the praiseworthy services and high traditions of the Corps. The memory of Joseph Harrison, Medical Officer of the first American man-o'-war, the "Alfred"; of Ezra Green, Surgeon of the continental sloop-o'-war, the "Ranger," in her memorable fight with the "Drake"; Lawrence Brooks, Surgeon of the famous "Bonne Homme Richard," in her fight with the "Serapis," and so on through a long list in the Revolutionary period and in the war of 1812.

"During the Civil War, which was largely fought on land, the naval surgeons were chiefly occupied with the illness occurring on vessels of the great blockading squadron," but in the naval actions at New Orleans, Mobile, off the coast of France, in the naval attack on Fort Fisher, and elsewhere, the surgeons of the Navy, among whom the name of William Longshaw stands out in relief, discharged their duties with commendatory zeal, skill and heroic disregard of self.

So it has been since that great struggle up to the present time, whether in the ordinary events of naval life or in emergency, great or small, at sea, at home and on foreign shores, the medical profession has had innumerable representatives among those who played a prominent part, and all furnish brilliant examples which attest their ability, bravery and faithfulness.

The decade which succeeded the return of peace to the country in 1865 was marked by a large accession to the Medical Corps ranks (no State furnishing a larger quota than Virginia), and during the time which has since elapsed its strength has progressively developed. As the Navy increased and alterations in the size and structure of ships of war were made, the necessity for the attendance of surgeons grew

in proportion, and gradually the medical establishment has evolved under one head, an organized unit, with an ever increasing high standard of efficiency in the personnel and a continual improvement in material provisions. To-day our hospital and dispensary facilities, at home and abroad, either do or are being made to conform in every detail to the most modern requirements for the successful care of the sick and injured; a sanatorium for the care of the tubercular sick of the Navy has been established at Las Animas, Colorado, and is proving in its rapid growth, to be a most valuable institution; schools for the training of our male nurses (members of the Hospital Corps) and for the preparation of our young medical officers for naval service have been established and are being rapidly developed; a corps of female nurses has been authorized by Congress; a quarterly medical bulletin is being issued by the Bureau for the timely publication of the many excellent and valuable special reports and papers sent in from stations and ships by Naval Medical Officers, and for the convenient distribution of such information as is deemed of importance to the representatives of the medical department in the performance of their duties, with the ultimate object that they shall continue to advance in proficiency in respect to all of their responsibilities and that the physical welfare of the naval personnel shall be maintained; the sick quarters on board battleships of the various classes are completely equipped in accordance with the latest accepted ideas in medical science, including the necessary appliances and devices for diagnostic precision, surgical technique and therapeutic methods; and, last in the enumeration of important accomplishments, the hospital ship has been officially acknowledged as a necessary provision in the proper care at sea of those who succumb to diseases or are the victims of injury while rendering service to their country.

Our first hospital ship in time of peace, the U. S. S. "Relief," was commissioned on February 6, 1908, and, since entering active service, she has fully justified her existence as an integral part of the big fleet, and has performed her duties without friction and to the great satisfaction of all interested. Even many, if not all, of the antagonists of the innovation have been disarmed, and in this, our virgin

experience with a floating hospital in time of peace, opportunity is given to prove the worth of such a provision before the world, to work out the details of its relation to the fleet and to establish its position in peace and war.

Much has been done to place the medical establishment of the Navy, in every particular, on a high plane, and there is now great reason to be proud of its attainments; but we are ambitious, not only that there shall be no backward step, but that progress shall mark the years until the profession as represented in the Navy has reached a plane of perfection and there keeps pace with all the advances of medical science and in its application under naval conditions.

The battleship of to-day is a fighting machine, and the allowed spaces for sick purposes are not utilizable in time of naval action, owing to insufficient space and lack of protection. Our principal means of meeting reasonable humanitarian demands and of fulfilling the expectations of a sovereign people, that those who fall during peace or war in service at sea to protect the honor of the nation shall be properly cared for, are hospital ships, offering every comfort and facility of well-appointed hospitals ashore; and it is being strongly urged that every fleet of over 10,000 men should have at least one vessel entirely devoted to hospital work, flying the Red Cross flag, and complying in every respect with the terms of the Geneva Convention and those of The Hague Conference. This will make it possible to give reality to the law of civilized warfare—that no unnecessary suffering shall be caused or permitted. The world-wide extent and earnest character of popular interest and activity in all that concerns the physical and moral well-being of mankind is an expression of that beneficial philanthropic public opinion in which the government services are participating and to which they are bending, consciously or unconsciously, as was the case when Admiral Evans diverted two ships of the fleet under his command in an effort to save the lives of a few seriously sick men.

As a consequence of the lesson which the medical profession has finally been able to bring home to the lay public, far and wide, by patient, persistent iteration and reiteration, and finally by a proffer of association in the

knowledge of the great truths which are daily coming to light, mankind is happily developing an individual and collective health conscience. There is a cry on all sides for schools of sanitary science and public health, and the leading argument for such educational institutions, from which dependable information may emanate and be distributed, bears upon the economic phase. A realization of the importance of enlightenment along the line of right living and obedience to the laws of health and the dictates of effective sanitation is growing, and the peoples of the world are becoming more and more eager to learn. Indeed, the branches of medical science have developed to such proportions that the profession is no longer able to work single-handed, but needs the intelligent understanding and sympathetic support of every one. In no walk of life is this more true than in the military and naval establishments, where so much that makes for efficiency depends upon the power and the honest, wise and unflagging employment of preventive measures. We in the Navy, like our colleagues in other public services, are doing all in our power to make the achievements in sanitary science the property of all, and to reap for the service and country the benefits of a concerted observance of its teachings and a common interest in the well-being of the whole public service personnel, to the end that preparedness for emergency may be based upon the solid foundation of physical soundness.

The range of practice which falls to the lot of the naval surgeons is almost unlimited, for it would be difficult to mention a disease or surgical condition, either acute or chronic, among the land forces or in busy manufacturing communities, which is not duplicated under their eyes. It must be remembered that in modern fighting ships, with their extensive and complicated machinery and devices for crushing an enemy, the list of trades and arts represented is large. Add to the inseparable dangers of these diverse special occupations those of the life and environs and duties common to all, and the wonder is that the per cent. of accidents is not greater.

The profession of the naval surgeon is certainly a broad one, and requires the same extent of scientific knowledge as is required else-

where, if, indeed, not broader. He has not the same easy recourse to consultation which the army or civilian doctor enjoys. He is so frequently isolated from that comforting possibility that he must be entirely self-reliant and ready to shoulder all responsibility, no matter what the emergency he is called upon to meet.

The Medical Corps of the Navy, broadly speaking, is representative of the medical profession in every state of the Union, and of the majority of first-class medical schools. The number from each, of course, varies, but each has reason to feel content with the character of work done and the part played by its contingent in this branch of naval service. In this organized body of medical men, on the one hand, there are comparatively few who have not acquitted themselves with honor and entire credit to their alma mater and their profession, and, on the other hand, there are many who stand out in relief as having a record for something more than simply duty well done. Space does not admit the enumeration of these, among whom we find brilliant instances of heroic devotion to duty, to country and to humanity, and records of work in the advancement of the sciences.

It should, perhaps, be sufficient to have made these general comments, but in addressing an Association of this State, I feel called upon to make some special reference to the Virginians and graduates of Virginia institutions representing the medical profession in the Navy. Of all sources from which we recruit the medical ranks of the Navy, this great State, particularly through its splendid University, the first of its kind in the South and founded by that illustrious statesman, Thomas Jefferson, contributes a vastly larger number of young men than does any other one. Since the year 1870, a total of one hundred and five Virginians or graduates of the University of Virginia have entered the Corps. This fact, in part, evidences a continuation of that large place which our citizens have always taken in honorable public life; and, in view of the proud history of Virginia through all the years from its colonial inception, it would be strange, indeed, if its sons lost sight of the exemplar in their heritage and failed to conduct their careers, if need be, as the brave Ambler did, with

a balance to the glory of the State and the nation.

In conclusion, I wish to say that in the early part of my administration of the Bureau of the Medicine and Surgery of the Navy, I realized that it would be impossible to recruit the medical ranks from the class of men, so necessary to the service, unless the Corps enjoyed the same consideration shown other branches of the Navy. Moreover, it was not tolerable that a body of educated men, such as the Medical Corps of the United States Navy, should be obliged to serve the Government under the conditions which constitute a belittlement tantamount to a degradation of the individual and the whole profession, and every effort was made to bring about a more self-respecting state of affairs in the Navy, and one which would be in entire accord with the position of dignity and importance which the profession has occupied throughout the ages of the world over. You may rest assured that to-day the status of the medical officer in the Navy and his relation to the rest of the service is established on a high plane and that little is to be desired in this regard. He is vested with proper authority, receives unstinted praise and admiration, as in civil life, wherever and whenever merited, and fills a position socially, professionally and officially which, I am sure, will meet your approval.

I now wish to thank you gentlemen of the State Medical Society of Virginia for this opportunity of placing before you the status of the naval medical officer of to-day in relation to that of our brethren in civil life and the naval service.

THE HUMAN ELEMENT IN MEDICINE.*

By PHILIP ZENNER, A. M., M. D., Cincinnati, Ohio.
Professor of Neurology in the Medical Department of the Cincinnati University.

We, as practitioners, are too prone to overlook the human element in disease. It is not alone that we may overlook the characteristics of the patient, his special physiological or pathological reactions, but we are apt to forget that great factor in health and disease, his mental attitudes and aptitudes.

It has been said that one-half the impaired

health is of mental origin. Of paramount importance here are the painful and depressing emotions, and the fears or mental representations, which appear in the patient's mind, as the result of external conditions, or present symptoms.

The chief mental states the physician should bear in mind, for it is thereby that he influences his patient for good or ill, joy or sorrow, hope or fear, expectation or mental representation of good or ill, and mental absorption and brooding.

The influences we are now considering naturally play the largest part in the neurotic, and in those suffering with various forms of nervousness, but yet they are important factors everywhere, even in acute infections, and in serious organic disease, for the nervous element is everywhere present.

I wish to speak of modes in which physicians use these influences for good or ill.

A powerful therapeutic agency is the mode of examination of the patient. A thorough examination is likely to create the idea that the physician understands the case, and, thereby, to give the patient full confidence in him. If, at the same time the physician has instilled into the patient's heart that he has his kindly interest and sympathy, he has already administered a powerful and helpful tonic in every case, and has put the case of nervousness far on the road to a cure.

But the physician should also bear in mind the harm that may be done by a thorough examination. Firstly, it may alarm the patient, may suggest to him disease or danger, of which he had not formerly thought. Such alarm is especially aroused by the examination of certain organs, the heart, above all. In this way, too, gynecological examination is oft a source of harm, especially vaginal examinations of young girls, which could, mostly, have been avoided. Such sources of harm should be eliminated by the physician through his knowledge of his patient, through care and tact, and oftentimes through reassurance of the patient before the examination is undertaken.

Again, the physician may harm his patient by neglect or delay in telling him the result of the examination—of the urine, for instance—the idea arising in the patient's mind that

*Read at the meeting of the Mississippi Valley Medical Association, held in Louisville, October 13-15, 1908.

he has serious disease of which his physician is unwilling to speak.

Another mode of doing harm, the physician should bear in mind more than many of us are accustomed to do is showing the patient the doubt which is in his own mind. We find symptoms that puzzle us, or doubt may have arisen in other ways, doubt which often need play no part in the conduct of the case, and may have proven to be of little consequence. But this doubt transferred to the patient's mind, very commonly is a source of worry, and may materially influence his condition.

Now, let us see how this human element figures in diagnosis and prognosis. A reassuring diagnosis and a favorable prognosis on the one hand, and an alarming diagnosis and grave prognosis on the other, are the most powerful mental agencies for good or ill which the physician possesses. And how lightly he sometimes handles them! Perhaps on vague and undefined symptoms he mentions a disease which fills the heart with terror, or tells a woman, comparatively young, that she will lose her nervous symptoms after the menopause, thus taking the surest means of indefinitely prolonging incapacity and suffering.

I do not wish to enter into the discussion of the question whether it is the duty of the physician to always tell the patient his true condition; but right here, there are certain facts he should constantly bear in mind; firstly, he is called into the case to help, not to harm it; secondly, errors in diagnosis, and, especially in prognosis, are exceedingly common, of which fact the patient should have the benefit; thirdly, there is a great difference in individuals—some are brave and bear bad news stoically, whilst others are driven to distraction. A bad prognosis is oftentimes the means of its own fulfillment, for while the disease itself should not have ended fatally, the patient dies as the result of his fears, or voluntarily ends his life.

Some of the most dread diagnoses—for instance, heart disease and locomotor ataxia—might, through careful explanation of the physician, be robbed of much of their terror. It should be made clear to the one that compensatory hypertrophy may avert all ill effects, so that length of life need not be affected; and to

the other, that many with locomotor ataxia are scarcely interrupted in life's activities, nor their lives shortened thereby.

Next, as to the human element in therapy. What I have to say now applies mostly to the functional nervous diseases, hysteria, neurasthenia and hypochondriasis. It is a very common custom to attribute many conditions of nervousness to various local diseases, that of the stomach, the uterus, etc., and to direct the treatment chiefly to those organs. That the relationship of cause and effect really exists in these cases is very doubtful; that is, farther than in so far as the local disease mars the general health. But there is no doubt that this local treatment often influences the nervous disease, an influence that may be for good or for harm. It is almost as certain that that influence is chiefly mental—that the local treatment does good or harm in these nervous cases chiefly through its effect on the mind. When they are benefited or cured, it is largely due to suggestion. When they are injured—and this occurs just as often, if not more frequently—it is largely because the local treatment keeps the patient's mind fixed on the diseased process. How often distracting the mind, altogether ignoring the disease, causes it to disappear. Who has not seen cases of "nervous dyspepsia" where the disease was prolonged by a careful and restricted diet, frequent examinations, local treatment, and the like, while it quickly disappeared with a general diet and the neglect of symptoms?

What we have been considering belong to the most powerful means by which the physician can influence his patient's mind for good or ill. But permit me, in addition, to speak very briefly of some direct modes of mind cure.

First, suggestion. This mode of treatment, the oldest and most universally applied, we are using constantly, either consciously or unconsciously. There can be no doubt that drugs and medical appliances, and even surgical operations, often produce their effects, partly or altogether through their influence on the mind. This is even seen, and not rarely, in organic disease, perhaps because the symptoms removed were brought on by suggestion—no uncommon

occurrence in organic disease—though this is not the whole explanation.

How much suggestion means, and its practical effects, we see when our patients pass from us into the hands of those outside the realms of scientific medicine, and see all their symptoms disappear, to the credit of some "ism," whatever it be, and to the discredit of scientific medicine. Though he is constantly using it unconsciously, the physician should study carefully and aim to make the most of this powerful agency. To do this, and at the same time avoid the pitfalls thus placed before him, he should know well both his patient and his disease.

The other mode of mind cure of which I wish to speak, is that of education or persuasion. It consists in explaining to the patient the nature and origin of his symptoms, in order that they be removed by his own insight and effort. It is applicable to those in whom the symptoms are due, in part or altogether, to the mind; that is, they are produced by suggestion, or are intensified through the mind, or are caused by fears or kindred mental states. This means chiefly cases of nervousness, but not them alone, for it is often applicable even in cases of serious organic disease.

Treatment by suggestion is very simple; it taxes neither physician nor patient; in fact, both are usually unconscious that it has been called into play. Treatment by education is a very different matter, and may tax to the uttermost both physician and patient. The physician should know his patient well, his disposition, intelligence and power of insight. He must know his power of insight that the explanation which he gives him fully satisfies his needs; and he must know his disposition, for it is necessary to address very differently the mind of the sensitive patient to whom his diagnosis may appear to be a personal reflection, and the open-minded one, looking only for the means of health. In every case the physician must have the full cooperation of his patient, or his own efforts will be futile.

Again, he must know what is in his patient's mind, for the better understanding of his suffering and its causes. On the one side are sorrows, worries, fears, obsessions, and the

like, possibly locked up in the patient's heart, while knowledge of them might have enabled the physician to give relief, if not speedy cure; on the other, are the many suggestive influences that are producing, and intensifying symptoms. The latter, the suggestive influences, may be hidden and hard to find. It may have been something felt, seen, heard, read, or only dreamt, now forgotten, though still having its blighting effects. Not rarely it is something that originally was, or appeared to be, cause of certain symptoms, and thereafter, produced those symptoms merely through the patient's idea; that is, the belief of this relationship of cause and effect. Very often, too, while a bodily cause of symptoms is present, it only becomes effective because fright fixes it, or suggestion strengthens it, or in other ways it is intensified by the mind dwelling upon it.

All these possibilities the physician should bear in mind. There are cases in which treatment by education or persuasion is very simple, the physician assuring the patient there is no basis for his fears or symptoms, and, therewith, they disappear. Other cases tax to the uttermost the resources of the physician, his knowledge, his efforts, and his patience. His first aim must be to give his patient full insight into his case, often no easy matter. His feeling that his symptoms appear quite independently of any act or thought of his, whether or not that opinion be correct, makes it hard to bring home to him that suggestion, and expectant or fixed attention are mainly responsible for his condition, and that their elimination will permit of a speedy cure. But it is not enough that the patient have insight into the nature of his symptoms; he must have and exert the power of removing them—again, no easy matter. Here the great need is building up in the patient confidence in himself, in his power to master himself and his illness. The physician must prove his case to him: show him by examples what he can do; demonstrate to him improvement that has taken place in him, when his mind is, perhaps, given to other symptoms that appear to be worse; commend his efforts and prophecy favorable results; point out how his fears, or mistrust, of treatment is retarding his progress; try to

get his attention away from symptoms and sources of suggestion, and the like.

Sometimes the physician will accomplish most by carrying the discussion to a higher plane of thought, the philosophy of life, truth and duty, and ignoring the symptoms altogether, wherewith they disappear. Not rarely the physician needs address the patient in this higher plane, for, oftentimes, false views of life and duty, faults in disposition and character, faulty use of will power, all supplemented by faulty education and environment, are the basis of the nervous malady.

Withal, while suggestion tends rather to weaken than strengthen will power, even though it removes symptoms, or the disease itself, treatment by education should strengthen every mental and moral fiber, and, therefore, lead to a more radical and permanent cure.

All that has been said in this paper is not to detract from those great aids in mental treatment, rest, isolation, overfeeding, diversion, amusement, and wholesome occupation.

Finally, I wish to emphasize how frequently the mental element plays a large or controlling part in the case—a frequency oft not even dreamt of—and to make the following suggestions: Let each of us take an inventory of his cases, and by careful study, or treatment, test the question, what present suffering is due to the mode of examination, the diagnosis or prognosis given, or the treatment instituted, and how much can be gained by remedying any harm thus done, or by well directed suggestions, or by a heart-to-heart talk to the patient as to what his mind has done and may do in the way of mental and physical health.

THE RELATION OF THE GENERAL PRACTITIONER TO PUBLIC HEALTH WORK.*

By ENNION G. WILLIAMS, M. D., Richmond, Va.
State Health Commissioner, etc.

Since I entered the Public Health Service of the State, the field has steadily broadened before my view. The State, with its one hundred counties and one hundred and seventy chartered towns, has never before seemed so large; the work extends to every class and condition of life, and involves every occupation.

*Original extract of a paper read before the Wise County, (Va.) Medical Society, held at Wise, Va., October 14, 1908.

There is one class that stands out above all the rest, and one which constitutes the greatest factor in the work. It is a class that can do the most, and yet be benefitted the least. The very purposes of public health work are antagonistic to the personal commercial interests of its members. An unselfish interest in humanity is the sole motive that prompts them to this work, and yet we find that these men are the leaders in promoting the public health. Their motives are too often misinterpreted and misunderstood. The reasons for their activity in this field are two-fold. The doctors, more than any other class, possess the knowledge which teaches that sickness is preventable, and again the doctors know and see the suffering, misery and poverty that accompany sickness. They see in their daily rounds the toll exacted by preventable disease, and realize that of all sad tales by tongue or pen, the saddest of all, it need not have been.

No man with even a spark of human nature in his breast, who knows that disease is preventable, can hesitate to raise his voice in protest against the negligence or ignorance of those in authority, or hesitate to do his part to save the innocent victims.

These are the underlying motives of a doctor who interests himself without pay, and even to his financial detriment in public health work.

The doctors realize that a large proportion of human suffering and misery can be prevented. They are daily eye-witnesses of happy homes blighted and promising lives wrecked. They see the prosperous dragged down to poverty and misery, owing to causes that are preventable that come of ignorance or negligence. All these are chargeable to an unworthy civilization which does not recognize the light of truth, or upon which the light of truth has not dawned. The fact that doctors, as a class, possess this knowledge more than others and that they see the need of it, confers upon them a high and sacred obligation. Although their advice too often falls on deaf ears and although they are misunderstood by those whom they hope to help, they will continue their efforts. The only reward which they need hope for must be the consciousness of duty performed and of suffering avoided. And too often this is after all their only reward, at least in this world.

Since the doctor knows to what extent and in what way disease can be prevented, what should he do and what part should he take in this public health work? In the first place he should do what he can in his individual capacity in instructing each household in which he is the medical adviser. He should also co-operate in every way that looks to an appreciation on the part of the people at large of the great discoveries of modern science about disease and its causes.

We are still in the dark ages of the appreciation of preventive medicine by the laity, and it is the dense darkness that precedes the dawn. In many places the dawn has begun. Already along the horizon we see the dim day breaking and tinging the heavy clouds of ignorance that look all the blacker. It is our privilege and the privilege of our profession to proclaim and usher in the light of truth. Truth is powerful and will prevail. The rising of the sun of truth is inevitable. It is coming surely and steadily. Its coming brings life, happiness, strength and the elevation of our race to a higher level. Sickness and sorrow will be reduced to a minimum. Eventually death will come as a physiologic process. Man will end his days gathered, not harshly plucked, but like an apple fully ripe, will drop into the lap of his mother earth in death mature.

It is such dreams as these that work in the public health service brings to one. Is it not a goal to which we should aspire?

The general practitioners are the greatest individual factors in preventive work. They are the sentinels or outposts and are first to recognize the presence of the enemy. Upon their prompt diagnosis depends the promptness with which preventive measures can be instituted. Upon the combined efforts of many doctors the Health Department can determine the extent of disease and recognize an epidemic, and direct efforts to check it.

Besides recognizing promptly an infectious disease and reporting the same to a health board, the doctor gives directions to the nurses and members of the family attending the case in regard to preventive measures and sees that they are carried out.

To summarize the doctor's contribution to public health; he recognizes the presence of

an infectious disease; he promptly reports the same to the Health Department; he instructs the family of his patient and sees that proper measures are taken to prevent the spread to others; he informs the public and the laity about the necessity and the possibility of preventive work.

I will have to pass over the consideration and comments upon the appreciation by the people and the authorities of this gratuitous service rendered thus unselfishly by the doctors.

The time will, however, come when such service will be duly and properly appreciated.

SPRAINS AND SPRAIN-FRACTURE.*

By MATTHEW ST. JOHN, M. D., Bristol, Tenn.

There is a story told of an accident which happened in the fifth century, B. C., showing the skill of the surgeon of that day and time. Darius, then King of Persia, while in a fox chase, leaped from his horse, and in so doing injured his foot, from which injury, violent pain followed for seven days and seven nights, and the Egyptian physicians who attended this distinguished patient, were unable to relieve him. In some manner this king learned there was in the camp a prisoner and slave, who was skilled in this particular line of work, or surgery, and his name was Democedes, but this slave and prisoner, upon being asked if he understood this kind of injury, affected ignorance, whereupon the king ordered out the instruments of torture, and Democedes, seeing there was no way out of the predicament, admitted he had acquired some little skill. He soon alleviated the pain, procured sleep and ultimately restored the foot to a sound state. It seems he either reduced a dislocation, or fixed a sprain, or Potts fracture, and put the joint up in plaster-of-Paris, then called plaster of Athens. This surgeon then showed remarkable consideration for his discomfited predecessors, well worthy of imitation in the present day, inasmuch as he interceded for the Egyptian physicians, whom Darius proposed to crucify as punishment for their lack of skill.

A sprain, even at this day and time, is commonly regarded as of trivial or minor importance, and yet, unless adequately attended to

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may cause a great deal of disability, especially among the wage earning people.

The lesion is defined as a severe stretching or tearing of one or more ligaments of a joint caused by violence, that wrenches or twists its connecting structures; again it is said to be a wrench or strain resulting in stretching or laceration of the soft parts, without external wound; but it has been shown by the X-Ray that sprains are quite commonly accompanied by slight fractures. In fact, a good percentage of so-called sprains should be classified as fractures. They are divided into—

First, simple sprains involving soft parts only.

Secondly, sprains with a fracture, the sprain being predominant, and the fracture undiagnosible under ordinary circumstances.

Thirdly, sprains with gross nerve injury; and further into those with swelling, and again those followed by pain and stiffness only—no swelling appearing, the latter condition being commonly spoken of as a *strain*.

Immediate swelling means blood extravasation as a rule, but in some instances it may be caused by the *contraction* of the end of an extensively *torn muscle*. Deferred swelling is due to exudation into the soft parts, along a limb, or about the trunk; or if in a joint, synovial effusion.

A swelling about the erector spinæ muscle is difficult of detection; in the thigh it is usually easy.

A deferred or remote swelling in a deep sprain, may show itself a *long way* from seat of injury, in consequence of the exudation finding its way along the fascial tracts in *line of least resistance*—the literature showing one case in which a patient while fencing, sustained a strain of the erector spinæ muscle, and a hematoma appeared in the *buttock*; and a second case in which a blood tumor appeared in the popliteal space after sprain of *upper part of thigh*.

The first essential in all cases of sprain, is to ascertain *if a fracture co-exists*; and it is important, if possible to examine all cases of sprain with the X-Ray; especially should this be the rule in sprains of joints. Secondly, if this valuable diagnostic agent is unobtainable, to consider *all* sprains near a joint, in which the symptoms are exaggerated as being attended

with some fracture complication, especially if the parts concerned, are the phalanges of the fingers, of the metacarpal region. Generally the pain in a sprain is at or near the seat of the injury, and if it be referred to a distant part, to the foot for instance, after sprain of knee, it indicates some injury to the *nerve* structures.

It is a wise plan and procedure always, in knee, shoulder and elbow regions, to examine *distant parts*, as regards *numbness*. This numbness may be limited in area and if it is only due to nerve *shock* disappears shortly, within a few hours; but if it should persist longer than twelve hours, it indicates pretty surely some gross nerve lesion.

The symptoms of a sprain are *instant pain*, and it is usually severe enough to provoke an outcry. This pain is generally attended by partial, if not total loss of function of the part or structure. Even though a sprain be slight, nausea, vomiting and faintness may be present. May or may not be swelling, but in the great majority of cases there is extravasation and the accompanying enlargement of the parts. After a day or so, crepitation is likely noticed, and it is caused by a deposit of plastic material into the soft tissues.

Acute suppuration in or near a joint, is not to be apprehended, unless the patient's general condition is greatly below *par*.

For purposes of treatment sprains are divided into those with swelling, and *those without*; the *latter* are of infrequent occurrence, and are most often found in the sprains of deep muscles of back and neck.

This one without swelling, and most often called a *strain*, calls first, for relief of pain, and this relief is best given by obtaining rest for the part. This rest is most readily procured by firm *compression* with a good plaster, preferably a good quality of moleskin adhesive. The old fashioned resin and other irritating plasters soon cause discomfort.

The main object is support and rest. In a strain of one side of chest wall muscles, the strapping should include two-thirds of the thorax, applied snugly, firmly and rapidly at the end of a complete expiratory effort and should pass well beyond the *midline* in front and behind. The immediate pain having been thus relieved, within a few days light massage

is to be commenced. Voluntary movements also should be encouraged at this time, governed of course by the amount of pain they may excite, but in most cases, these movements by changing positions give much comfort.

In the second class, those with swelling coming on immediately from blood extravasation, the indications are to arrest the bleeding, to encourage absorption and prevent adhesions and muscle waste. To arrest bleeding, hot fomentations and rest are indicated. Ice, I would not use, as in going over the literature I find three cases cited in which ice was used, and all three cases turned out to be confirmed albuminurics; hence if ice be employed at all, it should be only after a careful examination of the kidney excretion, and never used if either albumen or sugar be found.

Pressure is not comfortable during the active stage, as it causes pain, and frequently edema of the part below; especially is this true if the lesion be in an extremity. The increase in the first swelling having ceased, if the trouble is in a joint, a snug fitting flannel bandage if applied for twenty-four hours, followed by light massage, gives quick results. Rubber bandages are injurious and dangerous. Skillful strapping at this stage, the renewal being governed by the diminution in amount of swelling, is immensely beneficial.

If the sprain is of the soft parts without joint complications, hot lead and opium fomentations frequently changed give comfort. As soon as there is appreciable diminution in the swelling, unless the part feels abnormally hot to the touch, massage is indicated, but must be administered scientifically.

For the prevention of adhesions and muscle waste, voluntary movements are to be advised. Splints as a rule are a bad routine treatment. The patient should amuse himself by seeing how far he can move his joint; he won't go too far, the pain will govern him.

Massage should commence about thirty-six hours after cessation of increase in local swelling, provided the part be not abnormally hot to the touch.

When an interval occurs between the receipt of injury and the oncoming of swelling, and in cases in which swelling appeared, then went away, then again reappeared, the treatment depends first upon the absence or presence of heat,

and secondly in the case of joints, upon the amount of tension.

In the absence of heat, free massage and manipulation are indicated along with pretty firm elastic pressure with a flannel bandage. In effusion occurring some weeks after accident, and there is no local elevation of temperature, syphilis or gout should be suspected as a possible causative factor, and iodides given internally and the part rubbed with iodine petrozen or vasogen. No preparations of iodine cause such little irritation of the skin and at the same time give such good result. It is advised that in immediate hematoma, after sprain in easily accessible parts, the course of the lesion will be greatly shortened by free incision, turning out the clots and suturing—thorough asepsis of course being adhered to.

In tension of joints, that is when very severe, the aspirator, used with full observance of modern rules of cleanliness and technique is to be preferred to leeches.

In sprains *with a fracture*, the treatment differs only, that splints must be used long enough to allow the detached piece of bone to reunite sufficiently to retain its position during voluntary in movements; hence early movements should be passive and not voluntary as in simple sprain.

In the treatment of nerve injury where there is pain along course of nerve, perfect rest gives greatest relief, and here massage must not be employed. In cases in which numbness is present, as an indication of nerve injury and has not disappeared in twenty-four hours, after some three or four days it is wise to begin a skillful course of massage, supplemented also by the use of some electricity. If the part be a limb, exercise should be encouraged and in any part flying blisters over the seat of injury should be employed. They always do good and never any harm.

In regard to nerve injury I find an interesting case on record, in which after a sprain of leg, the patient in trying to warm his foot, found he had charred his toe by holding it in contact with the bar of the grate. In this case the injury to nerve was undetected until this accident occurred, no numbness having been sought for.

A stiff joint is often a consequence of sprain and is in most instances due to the prolonged

use of splints or other retentive apparatus, or to the delay in commencement of voluntary or passive movements. If the use of splints be thought necessary, 'tis well to remove them once daily and let the part be moved.

General relaxation of joints is most often due to wasting of muscles on the proximal side of an articulation, the knee being the one most often concerned, the wasting of the muscles of the thigh leading to laxness of the capsule of knee joint, and this leading to passive effusion. Here a mistake is likely to be made, by treating the local symptoms about the joint, instead of the muscles above, which are the origin of the trouble, the result being a bad joint.

If voluntary and passive movements are employed early enough, muscle waste will in most instances be avoided, unless the muscles have been rather extensively torn, when a very good result is not to be expected, and never do we get a good recovery in the condition known as "Rider's sprain," in which injury there is a laceration of the tendon of origin of the adductor longus in the thigh. This lesion is said to be rarely, if ever, completely repaired.

Deformities following sprains are most commonly seen in the fingers, but are also seen in the knee, hip, and at the wrist and ankle. In adults these deformities are nearly always due to an undetected fracture. In growing people they may arise from injuries to the epiphyses but even in the adolescent, the most common cause is an undetected fracture.

Sprain of an epiphysis may cause arrest of development or irregular growth, as in some instances of genu valgum. It is imperative I must again say, if an X-Ray picture be obtainable to have it made in all cases of sprain in which there is a shadow of a doubt as to diagnosis.

Just why osteo-arthritis sometimes follows trivial injuries of joints, is as yet not understood, but 'tis shown by statistics that it follows more frequently in those cases in which the treatment has been one of extensive immobilization. Local paresis sometimes follows after even the most skilful treatment, and 'tis well to be on the lookout at the time of accident for nerve injury symptoms, and if found, warn the patient in the prognosis that this paresis may occur.

Traumatic myositis ossificans is one of the

rarest sequels of a sprain. It is seldom painful, and may be differentiated from a periostitis, which sometimes occurs, by this absence of pain.

In closing, allow me to say that while claiming nothing original in these few facts brought out, I hope they will emphasize the importance of the condition known as sprain. That a wonderfully better result is to be obtained in this lesion by early massage, manipulation and movement, and that the protracted use of any retentive apparatus is harmful, and further, that it is a good plan to be on the lookout at time of accident, to ascertain if there be an accompanying fracture or any injury to the nerve structures, for upon this knowledge depends to a large extent the prognosis.

NECESSITY FOR DIAGNOSIS AS A PRELIMINARY STEP TO GYNECOLOGICAL OPERATIONS.*

By CHARLES R. ROBINS, M. D., Richmond, Va.

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The axiomatic character of the title of this paper would seem to leave small room for argument, but, however generally it may be accepted as an academic proposition, in practical application it does not always seem to be the guiding principle.

Gynecologic science has suffered much in the past, and doubtless also suffers in the present, from the ease from which many of its procedures may be carried out, thus forming a great temptation to the ambitious doctor with surgical aspirations. Unfortunately the attainment of results is not so easy. The object of this paper is not to criticize, or to seek to restrict the practice of this specialty, but to make more and better gynecologists, and to point out the necessity for those who practice in this field to fully equip themselves.

My first proposition is that no operation should be undertaken without first making a complete examination and diagnosis. Curettement for abortion is usually considered an easy and safe operation and one that is commonly done by general practitioners, and yet such a simple operation as this would come within this

*Read before the Medical Society of Virginia at its thirty-ninth annual meeting, held at Richmond, October 20-23, 1908.

rule. Consider for instance ectopic pregnancy. Perhaps forty per cent. of such cases are diagnosed primarily as early abortions. A curettement under such conditions to control hemorrhage would not only be futile and consume valuable time, but might readily bring on a fatal internal hemorrhage. A careful and complete examination establishes at once the pathological condition present and the indications for treatment. So frequently is this mistake made that it is a safe rule to exclude ectopic in every case of apparent abortion before proceeding with treatment. That this is not an idle assertion can be readily verified by the experience of surgeons whose work has brought them any considerable number of ectopic cases.

Accurate diagnosis is the exception and not the rule in gynecological affections, and I have often been impressed with this fact, and have wondered why physicians who have such clear ideas of the nature of other cases which they treat should not be able to present the same excellent results in their diagnosis of gynecological affections. On reflection, however, the reason for this becomes quite apparent. There is first a lack of opportunity. The same man who examines many chests and many urines will only occasionally have presented to him the necessity for gynecological examination, and even then, though the fact that the examination is conducted at home, he labors often under unfavorable conditions which would make the examination of an expert unsatisfactory. He thus is not able to acquire the delicacy and acuteness of touch which is absolutely necessary and which at the same time quiets the fears and resistance of the patient so that she will be docile and pliant, and conveys to the mind of the examiner a picture of the pelvic conditions. I know of few men who have acquired any dexterity, who have not first passed through a more or less protracted period when they were absolutely unable to get any information from their earlier examinations. There is no text book or school that can teach this manual dexterity and mental adaptability without actual and prolonged experience. The best place to acquire it is in some dispensary with a large clinic.

In addition to this mechanical aspect of the

case we have a much more difficult problem in estimating what, if any, of the conditions found to be present in the pelvis are the cause of the ill health or discomfort from which the patient complains. We have all of us, I am sure, seen many cases that complained of most violent symptoms who presented little or no demonstrable pathological lesions, and if this is the case, is it reasonable to expect that the correction of a slight abnormality will alter the character and disposition of a patient? It is at this point that the approach to gynecology from a purely surgical point of view presents its greatest weakness. A woman is not a mere container for delicate organs whose natural tendency is toward displacement, but a human being with organs of digestion, metabolism, secretion and excretion just as found in men, and in addition a highly developed nervous and emotional organism, necessary that she may respond to the demands of motherhood. Any one of all these may become deranged and be responsible for the symptoms of which she complains, and no mere mechanical examination confined to the generative organs can possibly meet the indications for the successful treatment of women. Of all the subjects contained in medicine, there is none that has to be approached with the same breadth of view as that relating to the diseases of women, and I know of no way of acquiring this except by some years of practice as a family doctor. The proper gynecologist is a product of evolution. It is only in this way that useless and harmful operations may be avoided. Operations for retrodisplacement of the uterus will not cure rheumatism of the back, or removal of the left ovary chronic constipation, or double ovariectomy hysteria, and I make the plea that the operator shall have acquired the ability to make these and other differentiations before he proceeds to operate, and above all that he shall have at least a fair ground for believing that the patient will be benefitted before he undertakes any operation.

Perhaps the most difficult problems of all are those in which a demonstrable lesion exists in the pelvis which is associated with general conditions, such as, for instance, neurasthenia. Here the question of what to do and what not to do are often of equal importance

and can only be settled by the ripest and broadest judgment, and a mistake of commission is often of greater consequence than one of omission.

Above all we should remember that because a woman is a female is no reason why every ailment she has should have its origin in the pelvis. Men also have backache and become tired and irritable on exertion. Let us seek for other causes before attacking these much offending and apparently very defenseless organs; and I think it quite a safe rule to require proof of their offence before attacking them.

It has often been said that gynecology is no longer a specialty but merely a branch of surgery. I have never been able to bring myself to believe that woman is nothing more than an operative manikin, and I do not hesitate to say that many women have been made to suffer from this pernicious doctrine and would have been infinitely better off without the gentle attentions of some enthusiastic but unwise surgeons. As a matter of fact, every specialty rises or falls on the question of diagnosis, and as this relates to women, the question is more than usually complicated, because we have to deal not only with the organs peculiar to the sex but also with their relation to and differentiation from all other affections, and in addition with an emotional and mental equipment essentially different from that in the male. Under such circumstances it must require a little extra study and thought to be able to correctly estimate the cause of the symptoms presented and the proper procedure to effect a cure. To accomplish these aims the highest sort of operative ability is necessary, but this is a means and not an end. The successful gynecologist is not the one who can count the greatest number of operations necessarily, but the one who can count the greatest number of women who have been made well, and if this is his object, he will be able to point with as much pride to those upon whom he has not operated as those upon whom he has. It is simply a question of doing the right thing, and the only guide is a proper diagnosis.

THE FORMATION OF THE MATERNAL PART OF THE PLACENTA.*

By LEO LOEB, M. D., Philadelphia, Penn.
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The investigations upon which I wish to report briefly are of interest in two directions: (1). They throw light on the mechanism through which the placenta is formed; and (2), They have a direct bearing on the origin of certain tumors which are of a transitory character and they may indirectly explain the origin of certain varieties of permanent tumors.

I. A direct experimental analysis of the formation of the placenta has so far not been possible. The continuation or the inhibition of the pregnancy has so far been the only criterion of the influence of certain experimentally changed conditions. It is, however, possible to produce very profound changes in the development of pregnancy through rather indifferent experimental procedures. Thus, it can be easily understood that up to the present time an analysis of the factors underlying the development of the placenta, and especially of the decidua, has been impossible. Born and especially Fraenkel undertook to establish a relation between the function of the corpus luteum and the hyperemia of uterine mucosa necessary for the imbedding of the ovum. The latter maintained furthermore that the corpus luteum was necessary for the further development of pregnancy and even for menstruation. In regard to the formation of the decidua he distinctly states that he does not assume that its development bears any relation to the function of the corpus luteum. For the reasons above stated Fraenkel never was able to establish his hypothesis as to the functions of the corpus luteum, and up to the present time the majority of investigators which repeated his experiments came to conclusions directly opposed to those of Fraenkel. At present the most generally accepted view as to the origin of the maternal part of the placenta is probably the explanation whose main representative has been Italban, namely, that the formation of the placenta is due to the stimulation of the fertilized ovum. And even if decidual tissue

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should form at places where the ovum did not directly touch the uterine mucosa, as in certain cases of extrauterine pregnancy, the ovum is supposed to exert an action which is still noticeable at some distance and causes the partial transformation of the uterine mucosa.

As the result of our investigation we are able to substitute for the development of pregnancy as the criterion of the result of experimental interference a new and entirely different criterion: namely, the development of deciduomata.

We found that in the guinea pig and in the rabbit (and presumably in other mammals just as well) it is possible to produce at will as many maternal portions of the placenta (decidua) as we ever may wish to produce. A preceding copulation and fertilization of the ovum is quite unnecessary for this purpose. Two conditions are requisite in order to achieve this result: (1)—The animal must be in a certain stage of its sexual cycle, namely, approximately from 2 to 9 days after ovulation, and (2)—it is necessary to apply certain indifferent stimuli to the uterus. If at this period of the sexual cycle we separate the continuity of the uterus at various places we obtain almost as many maternal placentas as cuts have been made, inside of the next 10 days after the operation. These artificially produced maternal placentas are in their structure almost identical with the placentas developing spontaneously in the course of pregnancy. They show therefore in the rabbit and guinea pig the same differences as the normal placentas of these animals do—differences which are very striking.

It was now necessary to determine experimentally why such indifferent stimuli as cuts in the uterine wall should determine the development of decidua only at certain periods of the sexual cycles. We were able to prove that this is due to an internal secretion of the ovaries, which at certain cyclic periods produce a substance which enters the circulation and fixes itself upon the uterine mucosa. If we extirpate the ovaries previous to incising the uterus, the latter are entirely or almost entirely unable to cause the development of the decidua. Such decidua, however, can also be produced in pieces of uterus which have been first transplanted into subcutaneous tissue and

which have therefore been entirely separated from all nervous connections. The influence of the ovaries is therefore a chemical one.

The development of the maternal part of the placenta is dependent upon two factors; first, on the chemical action of a substance secreted by the ovaries which enters the circulation and evidently fixes itself upon the uterine mucosa; and secondly, on the action of certain indifferent stimuli, as for instance, deep cuts which, however, are only active if the uterine mucosa has been previously sensitized through the ovarian substance.

This substance has therefore the function to prepare certain cells for a specific proliferation, and we may call such a substance a preparing substance, or a sensitizing substance; and it is difficult to abstain from pointing out a certain analogy which exists between the action of this preparing or sensitizing "growth" substance and the sensitizing substances in anaphylaxis. In the latter the injection of a certain substance increases the energy of reaction of certain tissue cells under the influence of a substance which would be indifferent to cells which had not been previously prepared; in the former case a certain substance likewise sensitizes cells. As the result of this sensitizing action the energy of reaction of certain tissue cells to otherwise indifferent stimuli is in a specific way very much increased.

Contrary to widely accepted views the influence of the ovum in causing the formation of the maternal part of the placenta is therefore not a specific one, but is comparable to the influence of incisions into the uterine wall. Specific is the action of the ovarian substance which sensitizes the uterine mucosa and enables it to react in a peculiar way to the stimulation of the ovum.

II. These experimentally produced maternal placentas assume in the guinea pig the appearance of distinct nodules, which not infrequently attain a considerable size and have the appearance of tumors, which however, after a relatively short but highly active period of growth, become necrotic. We see therefore that such "transitory" tumors depend in their origin upon the co-operation of two distinct factors, namely: (1) the "preparing" or "sensitizing" action of a substance which is produced in a certain organ and enters the circulation

(or which may perhaps in certain other cases act through the channels of the nervous system); and (2), a secondary indifferent factor, as, for instance, a traumatism which, under ordinary conditions, would not lead to tumor formation, which, however, if it affects a prepared or sensitive tissue or organ, may cause tumor like proliferative changes. We are apt to think of the possibility of such an origin in cases in which a tumor followed a traumatism.

We may also consider the action of a preparing chemical factor in cases where multiple tumors are limited to certain tissues or organs, as in the case of multiple lipomata, neurofibromata, enchondromata. The action of the sensitizing substance would show a specific affinity to certain tissues and organs, just as the ovarian substance is apparently specific in its action upon the uterus.

I am far from suggesting such an origin for all malignant tumors. As I pointed out on previous occasions, in the case of the transplantable tumors we have to assume the existence of definite stimulating agencies which are in close connection with the tumor cells and which are transmitted with the tumor cells. As to the character of such probably intracellular agencies we cannot speak with any degree of certainty at the present time. This problem must in the future, as in the past, be attacked from different sides. And it is especially appropriate here, where such interesting observations have been made on the endemic occurrence of cancer in Fishersville and its vicinity to emphasize the fact, that the practitioner who has the opportunity of close clinical observation in cases of human cancer can contribute much valuable material to the solution of this all-important problem.

EXTERNAL USES OF MAGNESIUM SULPHATE, WITH A BRIEF REFERENCE TO CASES.*

By JOHN S. HARRISON, M. D., Elm City, N. C.

There can be no doubt that if a rational scientific application of drugs to diseases is to be encouraged, then their empiral use should not be countenanced. On the other hand it is

a fact that, even to-day, therapeutics does sometimes advance faster than scientific research. I am sure every active practitioner present will bear out this statement, and will confess using remedies for which he can give no explanation of their physiological action. Mercury plays the same important part in the treatment of syphilis that it has for generations. Who among the older men here did not regard the salicylates as a specific for rheumatism long before it was known that it was an infectious disease? And was not quinine regarded as the remedy of choice in treating malaria for years before the discovery of its cause? It has been one of the blessings of human life that we have had many remedies whose action we cannot explain because science has not advanced far enough to discover the disease process which they influence, nor the manner in which they produce their effects. It is to be hoped that some of the energy expended upon the new remedies will before long be devoted to making the use of the old ones more rational. But not until the men in our laboratories, the physiologists and pathologists, have worked out the true cause of all ills to which flesh is heir can we hope to have an accurate scientific application of drugs to diseases.

The idea of using an old fashioned remedy like Epsom salts as an external application is not original with me. My attention was first directed to it about eighteen months ago by an article from the pen of Dr. Henry Tucker, of the Philadelphia General Hospital, in which he reported having obtained most excellent results in treating orchitis by wrapping the scrotum in a saturated solution of this salt. Then in the way of an experiment, more than any thing else, I began using it in other forms of inflammation, and it is on account of the uniformly good results obtained from its use that I am prompted to bring the subject before this Society.

How these results are brought about in conditions the causes of which are seemingly so widely at variance with each other I have no rational explanation to offer. It has been suggested that it is by its direct bacteriocidal action that a cure is effected, but this is not borne out by clinical experience. Others have claimed that osmosis plays an active part, but

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when we stop to consider that other salts which influence osmosis to greater extent do not exert the same beneficial action, then it would seem that this theory is also disproven. So until the pathology of the diseases in which it is of benefit shall have been worked out we will be compelled to continue its use in a purely empirical manner. It is in this empirical way that I have used it, first in orchitis, after Dr. Tucker's suggestion, then in erysipelas, ivy poison, "dew poison," superficial burns, and in acute articular rheumatism when the salicylates are not well borne. Thus you readily see its wide range of usefulness.

The method of application is practically the same as that of any other moist dressing, varying in some minor details of course with the nature of the particular case. Either a layer of from fifteen to twenty thicknesses of gauze, or a thin layer of absorbent cotton, neatly banded, covers the entire inflamed area, and is kept continuously wet with a saturated solution of the salt. This is covered with oiled silk, or waxed paper. In order to insure the dressing being kept continuously moist more of the solution should be added from time to time.

These dressings are allowed to remain intact from twelve to twenty-four hours, and then only removed to be re-applied immediately after examining the part, until the temperature has been reduced to normal and all signs of inflammation have disappeared. It is best, too, not to wash the parts during the application of the solution. And in every instance it is necessary to obtain absolute rest for the inflamed part.

CASE OF TETANUS.*

By H. COLLIS GRANT, M. D., Waynesboro, Va.

In offering this brief paper, there are two points to which I would like especially to call your attention. The first is the nature of the injury in the case which I will cite, and the second is the subsequent hemorrhage apparently from the stomach.

On June 10th, last, Mr. S., aged 35 years, walked into my office to have a wound dressed which he had received while working at a saw-mill. He had no idea of the nature of the missile which caused the wound, as he was some distance from the machine when struck

and was rendered unconscious by the blow for a few seconds.

The wound was a small, oval opening on the bridge of the nose, just between the eyes and measured half a meter in diameter. There was a clear opening into the nasal cavity, which apparently extended no farther. The nasal bones were perforated by the missile.

I cleansed the wound with a one to 4,000 bichloride solution and removed the loose bone, then applied a wet bichloride dressing. I examined the post-nasal pharynx to see if there was any bleeding from the nose and could see none, though I swabbed up behind the soft palate with a cotton applicator.

Patient returned the following day to have the wound dressed, saying that he felt first rate.

The next day I was called to his house to dress the wound, as he complained of feeling light headed and nauseated.

On the morning of the 13th, three days after the injury, I was sent for in great haste as Mr. S. was having severe hemorrhages from his stomach and was vomiting quantities of blood. On arriving I found that he had vomited a full quart of blood, mostly clotted. I administered dram doses of fluid ext. of ergot every 15 minutes for four doses, which had no effect in controlling the hemorrhage. Then I sent to the nearest drug store for an ounce of adrenalin chloride.

He continued to vomit at intervals of a half hour, the blood being free and not clotted, for four hours. The vomiting ceased after giving one dose of adrenalin and he began to feel better. He lost in all fully three pints of blood. I examined his pharynx between the attacks of vomiting and could find no bleeding from the nose.

He began to improve again, the wound remaining open and doing nicely.

On the twelfth day after the accident he complained of a feeling of stiffness about his jaws and on examination I found the muscles of mastication and the muscles in the neck to be noticeably rigid. There was slight elevation of the eyebrows and the abdominal muscles were slightly stiff. I sent for anti-tetanic serum at once which I received in an hour and administered it every four hours in 1500 unit doses.

*Read before the Medical Society of Virginia at its thirty-ninth annual meeting, held at Richmond, October 20-23, 1908.

On the following day I had consultation and under chloroform we found that a probe following the track of the missile penetrated in a direct backward course for a distance of four inches.

The wound was then curetted and syringed out with peroxide of hydrogen, packed with gauze, which was continued daily as a dressing.

He was given in all 24,000 units or 160 c. c. of the anti-tetanic serum. In spite of treatment the patient continued to grow worse, until on June the 28th he had a severe convulsion, which was relieved after giving a half grain of morph. sulph. and a half ounce of somnos. I continued the somnos to allay irritation of the nerve centers and fed per rectum for six days, the patient being unable to swallow.

On July the 6th the muscles began to relax and he made an uneventful recovery.

I believe the anti-tetanic serum was the most potent factor in bringing about a recovery.

The hemorrhage, which was apparently from the stomach, I have never been able accurately to account for. I think the wound was undoubtedly from a bullet and the seat of infection beyond the opening in the bridge of the nose.

I would like very much to hear the opinion of some of you gentlemen, especially in relation to the hemorrhage and anti-tetanic treatment.

A PLEA FOR THE VIRGINIA CONSUMPTIVE.*

By R. H. GARTHRIGHT, M. D., Vinton, Va.

We know that a ruinous disease is running rampant throughout the habitable globe, and that it has laid low in death more people than have all the wars named in history since the armies of the four kings joined battle with those of the five in the vale of Siddim. This loathsome malady thrusts its deadly fangs into the vitals of the inhabitants of every land and every clime. War slays its thousands, but tuberculosis its ten thousands!

To be gathered in the autumn of life "like a ripe shock of corn" with life's duty done, is "a consummation devoutly to be wished;" but the "reaper whose name is Death" is continuously swinging his keen and glittering scythe and gathering sheaves long before they are ready for the harvest. Consumption respects

no age or class, but most of its victims are the young—the hope of the State and Nation—who are filled with the joy of living.

The average man has no conception of the magnitude of the slaughter wrought by the tubercular bacilli. He will open his eyes in wonder when we tell him that more than *eight millions* of the living to-day will die of tuberculosis; that in our own land there are one million sufferers from this disease, that in Virginia alone we have twenty thousand consumptives with an annual death rate of five thousand, or fourteen deaths every day; that every hour and forty minutes, in every night and every day of every year, somebody within the confines of the Old Dominion dies of tuberculosis.

It is appalling! When a preventable and curable disease is allowed year after year to carry five thousand Virginians to the graveyards, it shows that something is radically wrong. Shall we permit the tubercular bacilli to invade and destroy our bodies, and thus demonstrate that they are still our superiors and conquerors? Must these infinitesimal, but powerful and pestiferous organisms continue to prove mightier than we?

On the subject of successfully combatting this disease we need more light, but with the knowledge the profession possesses concerning tuberculosis to-day, *greater* things can, and should, be done for our people.

Because for centuries *doctors* thought tuberculosis non-contagious and incurable, and so taught the public, it should not surprise us that *people* hesitate to believe in and accept modern methods of prevention and treatment. Men are slow to appreciate new ideas. It is evident that the people as a whole have not grasped the fact that consumption is contagious, preventable, and in many instances curable.

To eradicate this fallacy from the public mind is one of the problems confronting us. The task of getting this matter before the public in such a way as to bear fruit will be no easy one, but the great body of earnest medical men who have begun the crusade against tuberculosis have no thought of failure. To elicit the interest of the public on a question with which it is only partially acquainted is a stupendous undertaking.

When an *individual* exposes himself to dan-

*Read before the Medical Society of Virginia at its thirty-ninth annual meeting, held at Richmond, October 20-23, 1908.

ger to rescue another, he is counted a hero, but when another individual endeavors to reform an evil that effects countless human lives, he will receive meagre support and encouragement from the masses. Ruskin expresses the idea forcibly when he says,—“Human nature is kind and generous, but it is narrow and blind and can only with difficulty conceive anything but what it immediately sees and feels. People would instantly care for others as well as themselves if only they could imagine others as well as themselves. Let a child fall into a river before the roughest man’s eyes, he will usually do what he can to get it out, even at a risk to himself, and all the town will triumph in the saving of one little life. Let the same man be shown that hundreds of children are dying of fever for want of some sanitary measures which will cause trouble to urge, and he will make no effort, and probably all the town would resist him if he did.”

Now, in order to wage a successful warfare against tuberculosis in the State we need first to *educate, convince, interest and enthuse* the people. Without their co-operation and support we cannot succeed.

How can the public be aroused into action?

By organization. The main factors to be used in perfecting the organization are *men and money*—men possessing special qualifications for the work, and money to pay them for spreading abroad the principles which, if observed, will give health and prosperity to the masses.

In this fight medical men should lead. In every hamlet and county, in every ward of every city, there should be a band of intelligent, active citizens, with a physician at its head to instruct and direct the movements. Let the doctor first convince the members of the local organization that consumption is preventable; then let these members go out among the people and tell them the cause of the disease and the methods of preventing its spread. Public lectures delivered by gifted and magnetic speakers, newspaper articles, and personal work are all indicated.

There are hundreds of important facts which the people need to learn on this subject, before we can expect the Legislature to appropriate the necessary funds.

The present Statute law relative to State’s

public health is a wonderful improvement over any laws hitherto enacted, but the \$40,000 annually appropriated is not sufficient. True, with this amount much can be done toward preventing the spread of contagious diseases. Much is being done. The gentlemen who compose the present State Board of Health are vigorously pushing forward the work of preventive medicine, but their success would be ten-fold greater were the adequate resources at their command.

The most prevalent of all the preventable diseases is tuberculosis. Would it not be wise for a few years at least, to expend the major part of this appropriation in a campaign of education? When the people know the essential facts about tuberculosis, may we not hope they will demand of their representatives in the General Assembly the necessary funds to put into operation the methods of preventing the spread of the disease? It is known that the \$40,000 comes practically out of the pockets of the Virginia physicians in the way of license taxes. If the doctors, a small percentage of the State’s population contribute this much, would it not be right and proper for the other tax payers to *quadruple* this amount? Would they not count it a privilege to aid in the good work? Men have tried to figure in dollars and cents what would be saved to the State and country by preventing consumption, but in many instances they make the estimate entirely too small.

We are told that tuberculosis costs the State \$60,000,000 annually. A yearly appropriation of one or two hundred thousand dollars, seems formidable to the tax payers at first thought, but if properly expended it would in large measure check the ravages of tuberculosis. Sanatoria could be established and maintained, suitable literature sent into every household, lives would be saved, wealth and comfort would take the places of poverty and distress, and the money appropriated, in due time, would return, *quadrupled*, into the coffers of the State.

Two hundred thousand dollars expended annually in this cause would doubtless, reduce the death rate of tuberculosis at least fifty per cent. and this would happen quickly. From a business standpoint it would be wise to expend this amount or more, in order to save thirty million dollars (\$30,000,000).

While no specific for the "Great White Plague" has been discovered—while we are not as yet prepared to say to the very ill consumptive, "rise up and walk," we can show to those who under present conditions will contract the disease and go down to their graves after months of weariness and suffering, how to avoid this experience, and for years enjoy the blessings of health.

Let us do all in our power to save our fellow Virginians from the consumptive's doom. The work is a stupendous one; barriers high and strong, beyond which lie an ocean of difficulty, confront us, but having "taken arms against this sea of troubles," let us by continuous and strenuous "opposing, *end them.*"

Book Notices.

Gynecology and Abdominal Surgery. Edited by HOWARD A. KELLY, M. D., F. R. C. S., Professor of Gynecologic Surgery, Johns Hopkins University, etc., and CHARLES P. NOBLE, M. D., S. D., Clinical Professor of Gynecology, Woman's Medical College, Philadelphia, etc. Illustrated by Herman Becker, Max Brodel, and others. Volume II. Philadelphia and London. W. B. Saunders Co. 1908. Large 8vo. 862 pages. Cloth, \$8.00 net; half Morocco, \$9.50 net.

The first volume of this system was issued about a year ago. Three of the twenty authors of articles in this second volume are from the South—namely, Drs. George Ben Johnston, Richmond; Floyd W. McRae, Atlanta, and Stephen H. Watts, University of Virginia. Dr. Kelly writes on Operations upon the Spleen, and gives one of the fullest chapters on the subject—even in reference to diagnosis of its diseased conditions—to be found in the general run of text-books. The system is of more special interest to operative gynecologists and abdominal surgeons. The book is handsomely issued and thoroughly illustrated in keeping with highest claims of the art. Each of the twenty articles is complete in itself as to the subject in hand.

Surgical Memoirs and Other Essays. By JAMES G. MUMFORD, M. D., Instructor in Surgery, Harvard Medical College, etc. Illustrated. New York. Moffat, Yard & Co. 1908. Cloth. 12mo. 358 pages. \$2.50 net.

It is worrying to undertake to read a book, unent as to its pages, and there is no excuse for

the issue of such publications at this day—and there is less excuse when a book is worth reading. Whatever the necessities of other days compelled, they do not exist now. The book opens with a sketch of ancient surgical history, with a summary of the teachings of the old surgeons. Then follow sketches of Sir Astley Cooper, Sir Benjamin Brodie, John Collins, Warren and Jacob Bigelow. An account of "Boston Medicine 100 Years Ago" is next given. An address on "Studies in Aneurysm" is republished; also an "Address to Nurses." An essay on the "Nurse's Vocation," and the book concludes with a chapter on the "History and Ethics of Medicine." It is a good doctor's reception office table book to occupy patients while waiting for the doctor to come out of his consultation room.

Woman—Treatise on the Normal and Pathological Emotions of Feminine Love. By BERNARD S. TALMEY, M. D., Gynecologist to Yorkville Hospital and Dispensary, etc. With twenty-three drawings in text. Third enlarged and improved edition. The Medical Council, Selling Agent. Philadelphia, Pa. 12mo. 258 pages. Cloth.

This book, intended "for physicians and medical students," will have a large demand from the prurient public as soon as its contents become generally known. The first edition was issued in 1904; the second, in February, 1908; and now, the third, in May, 1908. Read aright, it is an instructive and useful book to doctors and scientists; but given approving publicity, it is apt to be sought by people to satisfy a curiosity; and like many another good thing, it may be read simply by designing, lascivious persons. One is struck with the immense amount of Bibliography—this book containing five full pages. It is a book that has to be read to be understood. It contains 97 chapters, covering almost every phase of the erotic emotions.

Diseases of the Skin and the Eruptive Fevers. By JAY FRANK SCHAMBERG, A. B., M. D., Professor of Dermatology and Infectious Eruptive Diseases, Philadelphia Polyclinic and College for Graduates in Medicine, etc. Fully illustrated. Philadelphia and London. W. B. Saunders Co. 1908. 8vo. 534 pages. Cloth, \$3.00 net.

This is truly the practitioner's desideratum as to a text book on diseases of the skin. No chapter is tiresome by its over fullness, but contains just what the doctor wants in descrip-

tion of diseases, their symptomatology, diagnosis, prognosis and treatment. Illustrations drawn from clinical cases wonderfully help the text. Special descriptions are given of the eruptions of infectious fevers, which assist both in the diagnosis of the exanthem and in the differential diagnosis from ordinary skin diseases that have eruptions at all similar. The thoroughly practical caste of the book is what specially recommends it for the general practitioner. Its price puts it within the reach of all.

Text-Book on Diseases of Women. By CHARLES B. PENROSE, M. D., Ph. D., formerly Professor of Gynecology, University of Pennsylvania, etc. With 225 illustrations. Sixth edition, revised. Philadelphia and London. W. B. Saunders Co. 1908. 8vo. 550 pages. Cloth, \$3.75 net; half Morocco, \$5.25 net.

The present edition is an old, familiar text and guide book for practitioners, brought up to date. It is systematic in arrangement, and thus well serves the purposes of the student. It is written from the standpoint of observation and mature experience, and thus serves as an authoritative book for the practitioner. Its descriptions—whether of disease in aiding diagnosis, or in the technique of treatment or operative procedures—furnish good guides for the clinician. This book will long hold a standard rank among the many now devoted to gynecology. Beside the headings of the 43 chapters in the contents, the index helps to give prompt reference to a subject sought.

Text-Book on Operative Surgery. By WARREN STONE BICKHAM, M. D., Ph. M., Junior Surgeon, Town Hospital, New Orleans, etc. Third edition, greatly enlarged, containing 854 illustrations. Philadelphia and London. W. B. Saunders Co. 1908. 8vo. 1206 pages. Cloth, \$6.50 net; half Morocco, \$8.00 net.

As compared with the former edition, the present edition is to all intents and purposes a new book on Surgery—each chapter representing the latest and best of approved methods. It is, as its title indicates, a work on *Operative Surgery*—including dislocations, fractures, etc. It presumes that the diagnosis is made, and that the diseased conditions are understood; and goes at once into the matter as to what is to be done. Neither the principles of surgery nor are surgical diseases discussed—every page being devoted simply to the description of operations intended for relief of the

diseased condition. It apparently covers every surgical operation common on the human body—recommending only those which experience has taught to be the simplest and best. It is thoroughly clinical in details, and will prove itself an eminently useful book for all surgical operators.

Manual of Clinical Diagnosis. By JAMES CAMPBELL TODD, Ph. D., M. D., Associate Professor of Pathology, Denver and Gross College of Medicine, etc. Illustrated. Philadelphia and London. W. B. Saunders Co. 1908. 12mo. 319 pages. Flexible leather, \$2.00 net.

This is an everyday, practical guide book for the help of diagnosis. It describes conditions found in the secretions which point to the nature of the disease—concerning itself especially with the sputum, the urine, blood examinations, stomach contents, the feces, etc. The *Manual* is profusely illustrated as to chemic and microscopic findings, and clinical suggestions. A useful section in urinalysis relates to the detection of various drugs eliminated by the kidneys. Important chapters also relate to the recognition of animal parasites, and miscellaneous examinations, as of pus, milk, semen, etc. While several methods are detailed for each examination, stress is laid upon the importance of adopting that one with which the physician can best familiarize himself.

Obstetrics for Nurses. By JOSEPH B. DeLEE, A. M., M. D., Professor of Obstetrics, Northwestern University Medical School, Chicago, etc. Third edition, thoroughly revised and enlarged. Philadelphia and London. W. B. Saunders Co. 1908. 12mo. 512 pages. Cloth, \$2.50 net.

Possessors of the second edition scarcely need concern themselves with the present one, for it contains very few changes or additions. The simplicity of anatomical and physiological descriptions, the plain, practical talks about techniques, aided by the numerous illustrations, and the instructive methods as to procedures in dealing with the pregnant woman, or when she is in labor, and also what to do for her after childbirth, and the early attention to the infant make this book a very useful textbook for the nurse, and will even often serve as a good reminder for the doctor. All the details of asepsis and antisepsis during forceps or other operative cases are well stated. It is a good book for the purpose for which it was written.

Editorial.

Medical Corps U. S. Navy.

It is sorely to be regretted that the acoustics of the main hall in which the Medical Society of Virginia held its late sessions were so miserable that many of the papers were not heard. This appears to have been especially so when invited guest, Dr. Presley W. Rixey, Surgeon General U. S. Navy, presented his interesting, instructive and suggestive paper, which we publish in this issue of the *Semi-Monthly*.

The historical part of his paper is most readable. The gradual development of the Medical and Surgical Department of the Navy to its present exalted position is most commendable, and, indeed, the opportunities presented for study of the various branches of medicine are exceedingly inviting for any young doctor whose ambition is to see more and learn more of his chosen profession. He is afforded many opportunities to see more of the world than his civilian confrere, and his very connection with the U. S. Navy as a surgeon gives him an entre to social and scientific circles when in foreign ports. He is not financially embarrassed by providing for the full equipment of his laboratories or surgical armamentarium, for the Government does all this for him. Special quarters are now set apart for his comfort and study, and trained nurses and pharmacal assistants are at his command.

Of very modern introduction, hospital ships are being associated with all large fleets, flying the Red Cross flag, under the International protection of the rulings of the Geneva Convention, which protect it from gun-fire during war or battle. Thus the surgeons in charge can perform their humanitarian duties without apprehension of battle dangers. In fact, on such a ship, there is greater safety for the sick and wounded than the temporary quarters that have to be established in times of battles between land troops. We bespeak for this paper by Surgeon General Rixey a line by line perusal; for it must stimulate in the minds of many a capable young doctor the desire to be associated with the U. S. Navy as one of the Medical Corps. Having gained his position, there is opportunity to rise in rank ac-

cording to his qualifications. Oftentimes, without material occasion for personal expenses, his monthly salaries may accumulate and be deposited to his credit in the bank, which total amount may serve him a good part in some future day of need.

The good reports, given by Surgeon General Rixey, as to the numerical strength of the Medical Corps of our Navy derived from our own University of Virginia, are very gratifying. Why graduates of the two other medical institutions in our State have not availed themselves of the inviting opportunities we cannot imagine. Thorough college education is demanded for entrance, as shown by the fact that only about 25 per cent. of applicants pass satisfactory examinations. But once in the U. S. Navy—even as Assistant Surgeon—every facility is offered for rise in rank according to the aspirations and ability of the young doctor.

The Southside Virginia Medical Association.

Held its twenty-third session at Emporia, Va., December 8th. A number of physicians from the surrounding counties, together with a number of others invited from Norfolk, Petersburg and Richmond, were in attendance.

Papers were read as follows: Subject for General Discussion: "Remarks on Ehrlich's Lateral Chain Theory," by Dr. Joel Crawford, Yale; "Appendicitis Complicating Pregnancy, With Report of Two Cases," by Dr. B. L. Hillsman, Richmond; "Some Remarks on Infantile Spinal Paralysis," by Dr. O. C. Wright, Jarratt; "Obscure Syphilis," by Dr. T. W. Murrell, Richmond; "Stricture of the Female Urethra," by Dr. C. W. Astrop, Surry; "The Abuse of Purgatives in Intestinal Obstruction," by Dr. J. Shelton Horsley, Richmond; "Cerebro-Spinal Meningitis Complicated With Typhoid Symptoms," by Dr. T. M. Raines, Wakefield; "Importance of Early Attention to Obstructive Respiration in Children," by Dr. Joseph A. White, Richmond; "Anesthetics," by Dr. Southgate Leigh, Norfolk; "A Brief Report of Two Unusual Cases of Multiple Sclerosis, With Especial Reference to Diagnosis," by Dr. J. Allison Hodges, Richmond; Paper (title unannounced) by Dr. George Ben. Johnston, Richmond; and "Diphtheria In Its Relation to Public Health," by Dr. R. A. Mar-

tin, Petersburg. Dr. R. C. Bryan, of Richmond, showed two patients, the first having been operated on for removal of the Gasserian ganglion to relieve neuralgia, and the second case was that of ruptured spleen, necessitating its extirpation. Both patients had entirely recovered.

Officers for 1909 were elected with the following result: President, Dr. C. W. Astrop, Surry, Va.; Vice-Presidents, Drs. T. M. Raines, Wakefield; E. M. Parker, Emporia; W. L. Devaney, Dendron; R. H. Sims, Powellton; Treasurer, Dr. O. C. Wright, Jarratt; Secretary, Dr. E. F. Reese, Courtland.

The next meeting of the Association will be held in Petersburg next March.

Medical Society of Virginia, Session 1909.

The local profession of Roanoke, Va., has designated October 5-8, 1909, as the time for the fortieth annual session of the Medical Society of Virginia, in that city. The session, as usual, will be called to order at 8 P. M., Tuesday. Much interest is already developing in the success of the session. The Committee of Arrangements will soon be announced. The President of the Society, Dr. Stuart McGuire, of Richmond, Va., has become active in visiting different sections of the State so as to enlist influences in behalf of the Society.

Dr. J. C. King,

Who served as an Assistant Physician under the late Dr. Robert S. Preston of the Southwestern (Va) State Hospital at Marion, and more recently in the same capacity under Dr. A. S. Priddy, lately resigned on account of continued ill health, has been chosen to succeed Dr. Priddy. He will assume the discharge of his duties as Medical Superintendent of that institution at once. He has an excellent record to commend him to the favorable consideration of the profession.

Church Hill Medical Society Officers.

This flourishing Medical Society of Richmond City has elected the following officers for 1909: President, Dr. E. A. Hord; Vice-Presidents, Drs. C. W. Massie and George W. Gay; Secretary-Treasurer, Dr. Ramon D. Garcin.

Dr. Stuart McGuire.

During the session of the Southern Surgical and Gynecological Society, held at St. Louis last week, this distinguished Richmond surgeon was elected President. He is also President of the Medical Society of Virginia, and an ex-President of the Tri-State Medical Association of Virginia and the Carolinas. His active interest in these organizations have had their good results in adding to their successes. He is also President of the University College of Medicine of this city.

Dr. McGuire Newton

Has been elected President of the Richmond Academy of Medicine and Surgery for the year 1909. His characteristic energy and push will no doubt show good results during his term of office. Dr. Mark W. Peyser remains Secretary, and Dr. W. H. Shepherd, Treasurer.

The Bedford County Society

Held its regular meeting at Bedford City, Va., December 14th. Dr. W. A. Strother read a paper on "Bier's Hyperemic Treatment." Two new members were received. After the usual business routine, the Society adjourned to the dining hall, where a "smoker" brought the evening to a pleasant close. Dr. J. A. Rucker, of Bedford City, is Secretary.

Obituary Record.

Dr. Robert Wilson Robinson

Died at his home at Danville, Va., after a lingering illness, aged 39 years. He joined the Medical Society of Virginia in 1892. He was for some years City Physician for Danville. He is survived by his mother and a sister who live at Danville.

Dr. Charles Graham Cannaday

Died suddenly from heart disease, at his home in Roanoke, Va., December 17th, aged forty-eight years. He was a native of High Point, N. C. He graduated from the St. Louis College of Physicians and Surgeons 1889, moved to Roanoke, and established the first hospital in that city. He joined the Medical Society of Virginia 1889, and attended a number of its sessions afterwards. He was a frequent contributor to the medical journals. His mother, widow and three brothers survive him.

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Original Communications.

SURGICAL TUBERCULOSIS, WITH ESPECIAL REFERENCE TO THE USE OF TUBERCULIN IN DIAGNOSIS AND TREATMENT.*

By R. TUNSTALL TAYLOR, B. A., M. D., Baltimore, Maryland.

Surgeon-in-Charge, Hospital for Crippled and Deformed Children; Clinical Professor of Orthopedic Surgery, University of Maryland, etc.

Between fifty and seventy-per cent. of the surgical cases seen in children present tubercular bone or joint lesions, and it especially, therefore, behooves us to go very particularly into detail in perfecting our technique in the diagnosis and treatment of these conditons. Should the diagnosis not be made early and should the treatment not be thorough, what a responsibility rests upon us for the resulting deformity, not to say life, of the little patient by neglect!

Everyone is familiar with the shocking deformity, alike painful to the observer and patient, of tubercular osteitis of the spine, commonly called Pott's disease; or the distorted knees or atrophied, flexed and adducted legs of tubercular hip disease with the crutches and high-soled shoes these cases must wear through life from neglect. What ravages the disease more advanced, makes in sapping the vitality when fistulous tracts make their way from the primary bone lesion to the exterior, and secondary infections result from the staphylococcus aureus and albus, streptococcus, bacillus pyocyaneus and coli communis, to name the commoner varieties! We then note the hectic fever, and if of long duration, the amyloid viscera with ascites, albuminous urine, general miliary tuberculosis or meningitis and death.

Therefore, I say we must practice preventive medicine whereby we cannot only in a very

large percentage of cases prevent these untoward results, but actually restore them to full bodily function and health. Early diagnosis and efficient treatment must be our watchwords.

During the past decade two means of diagnosis in bone and joint lesions have been added to clinical observations, which virtually make the diagnosis unerring, namely, the X-ray photograph or skiagram and the various tuberculin tests.

X-Ray Diagnosis. I use the term skiagram advisedly because I find that far too many physicians feel they have discharged their duty to their patients if they have looked at the suspected part with a fluoroscope; whereas, in reality, I do not believe any one can recognize either the presence or absence of early bone tuberculosis by that means. In order to properly study a skiagram the observer must be thoroughly familiar with the normal appearance of the part at the age, for we know that the epiphyses in very young children are exceedingly small and immature, and in established disease there is such clouding shown by the X-ray in the epiphyseal region that there is some similarity in appearance.

As often emphasized by radiologists in regard to the limbs, similar radiographs of the two sides should be made: *i. e.*, the normal as well as the suspected should be in similar positions with regard to the X-ray tube. Then, if one thigh is rotated outward and the mate inward, the resulting skiagram will be valueless for accurate comparison.

One of the first changes noted by the X-rays in bone tuberculosis is the obscuration of the sharp, definite outline of the bone, so that the epiphysis may be actually invisible; more or less rarefaction occurs at the seat of lesion, so that a spot of tubercular absorption is soon manifest. This we do not see in other osteoarthritis. Atrophy, both epiphyseal and diaphyseal, is early apparent, although in some

*Read before the Richmond Academy of Medicine and Surgery, November 10, 1908.

instances there is a temporary hypertrophy of the epiphyses especially noticeable in the knee. Later, of course, there is the rat-eaten, gnawed appearance in the bone. There is not the elevation of the periosteum which we see in syphilis, scurvy, periostitis and myelitis. In osteosarcoma, there is a spongy appearance and bone hypertrophy. There is no attempt at repair, with the formation of involucrum and the throwing off of sequestra. In the spine, one sees the apparent fusion of adjacent vertebral bodies with the obliteration of the intervening intervertebral discs. Thus, after a little study and careful examination, a case of bone tuberculosis can be recognized.

In my opinion, the X-ray is by all odds the most important and accurate means of making a diagnosis in bone or joint disease as it definitely locates the lesion, which tuberculin does not. This, I emphasized in a paper some years ago (1). The X-ray plate can be in hand, ready for examination, in an hour. In cases presenting any question, tuberculin should be used in addition.

Tuberculin diagnosis. Many of us for years have been opposed to the subcutaneous injection of large doses (from one to five milligrams) of the original tuberculin in cases of suspected joint disease in children for the reason that it made a sick child sicker with the temperature reaction, nausea, diffuse pains, etc., focal reaction at times and local reaction at the point of injection. Then, in the absence of the focal reaction, (often absent with moderate doses), at the seat of disease, what did this tell us? Did it show us, if a positive reaction occurred, that there was not a mediastinal or bronchial lymph gland or mesenteric gland that was caseous; or that there was a tubercular tarsus as distinguished from a focus in the lower epiphysis of the tibia? (2). Several days must be consumed in the endeavor to make a diagnosis by this method with the aid of the study of the two-hour temperature chart.

To those of us opposed to the subcutaneous injection of the larger doses of tuberculin, the careful study of Wright's opsonic indices in these children added another reason for discarding it, viz., the sustained "negative phase" often seen after comparatively small doses of tuberculin given therapeutically. Thus, in a series of twenty cases in which the blood was

examined by the opsonic index tri-weekly over a period of six months by us at the Hospital for Crippled Children in Baltimore, we found that even so small a dose as 1-200 mgm. of T. B. would give a prolonged negative phase without other apparent constitutional symptoms, and this was not an isolated case, but in all and invariable; but it did not occur if the dose was between 1-500 and 1-1000 mgm. (3).

If the opsonic index means anything and is even an approximate index of the degree of resistance or immunity shown by the patient, certainly we ought not to use any means of diagnosis that will for a prolonged period retard this acquisition of greater resistance or establishment of immunity. We must realize we are not solely, nor even especially trying to cure the patient of the local disease, but of the general tubercularized state. Fortunately within the past year, two other means of tuberculin diagnosis have been presented to the profession, viz., the Wolff-Eisner-Calmette conjunctival reaction and Von Pirquet's cutaneous or percutaneous reaction which are familiar to you all. (4, 5, and 6.)

It may be of interest to summarize our results with these two methods on fifty consecutive cases in one method, and then a second fifty cases with the other method, all admitted to my service within the past eight or nine months. These observations have been published in full elsewhere. (7).

Briefly, with Calmette's conjunctival reaction, the so-called ophthalmo-tuberculin test, in fifty cases, thirty-five were suspected clinically and by the X-ray of having tuberculosis and all reacted. The fifteen cases which were not thought tuberculous did not, thus confirming the tentative diagnosis. Five of the positive cases had marked reaction; four had severe reactions, and one had a very bad corneal ulcer which persisted two months, causing us much anxiety for the child's vision which, happily, was not impaired. Thus, from our experience, corneal ulcer is to be feared in two per cent. of these tests.

A one per cent. of Calmette's alcoholic precipitated tuberculin was used in four-fifths of these cases, but we found a .5 per cent. solution just as efficacious and safer, but smaller dilutions gave no results.

The possible danger renders one more or less apprehensive of this method.

Skin reaction. Fortunately for surgery in children, the skin reaction is an extremely reliable test, while in older people nearly every one, in cities at least, has been more or less exposed to tuberculosis somewhere. The skin test shows that approximately sixty per cent. of all older cases give a positive reaction. In children this is not the case.

In our series of fifty children examined by this method, twelve were not thought to have tubercular lesions, but four of these reacted; one showing a marked reaction was an orphan asylum child, age fifteen, with infantile paralysis. She had evidently a focus somewhere in her body.

Of the thirty-six suspected cases, three did not react—two of coxalgia and one healed tubercular tarsus. This gave an error of a little over seven per cent. Five per cent., ten and twenty per cent. dilutions were used in these failures, and perhaps if stronger solutions had been used a positive reaction would have occurred.

Many of our cases react readily to bovine tuberculosis, or as it is known, to Spengler's *perlsucht* or pearl-disease tuberculin (following the lead of Dr. Detre of Budapest); and we are now testing comparatively the reaction to a pure strain of human and bovine tuberculin to determine in each given case which tuberculin to give therapeutically. Parke, Davis & Co. inform me that the ordinary veterinary tuberculin is usually made from human strains. It must be understood also, that we are not absolutely sure that strains from a pulmonary case are human, nor that those from a tuberculous cow are proven to be bovine at the present time. Our cases, thus far react about equally—half give a more marked reaction to the bovine, and the other half to the human tuberculin when used synchronously.

With the time at our disposal, it is quite impossible to go very deeply into the treatment of the various bones and joints, but certain underlying principles may be enunciated.

In the first place, we must regard our patient as one who is tuberculized, *i. e.*, as one presenting decreased or lowered resistance to the bacillus tuberculosis, and primarily, we must endeavor to increase the immunity of the indi-

vidual not only to control the extension of the local manifestation, but to minimize outbreaks elsewhere and to shorten the duration of the local trouble.

The well-known fresh air treatment for pulmonary tuberculosis by means of tent-life, shacks or porch treatment, gives equally valuable results in surgical tuberculosis, and should be insisted upon. Even after a very short period of such treatment improvement will be noted in the color, nutrition, appetite, absence of insomnia and restlessness as well as distinct gain in the local trouble.

We have met this requirement since 1897 at the Hospital for Crippled Children, by having an adjunct Mountain Hospital in the Blue Ridge of western Maryland, where we use tents and shacks and the children live, eat, sleep and are bathed out of doors. Up to this time, this has only been possible from May to October; but the results have been so encouraging that we will extend the period for keeping this branch of our work open for a longer period, if not all the year round.

As a further aid to immunization of the patient, we have used tuberculin T. R. for the past two years, hypodermically, in doses of from 1-500 mgm. to 1-1000 mgm. once weekly with distinct satisfaction in hospital, dispensary and private practice. Restoration of functional use has been apparent in cases even after sinus formation or the aspiration of extensive secondary abscesses which indicated material bone destruction. This mode of treatment in children shortened the duration of the disease and produced repair which, prior to its use, we did not anticipate as an end result. Without observations of progressively increasing the dosage, neither clinically nor by opsonic determination did we feel our results were as good.

Ochsner (8) of Chicago reported at the recent meeting of the International Congress on Tuberculosis, in Washington, an interesting observation in regard to the use of tuberculin. He had a case of bilateral cervical tubercular adenitis. He operated on one side and found it surrounded by a dense wall of connective tissue. He then began tuberculin treatment, and after some months found, when he operated on the other side, little or no scar tissue, but excessive vascularity, so that every touch of the knife or snip of the scissors produced

profuse capillary oozing. He, therefore, advances the theory that the tuberculin in proper doses produces not only an increased phagocytosis for the tubercle bacilli themselves in the leucocytes, but a phagocytic activity, as he expressed it, that could "tear down the fortifications of the hostile garrison and enable the attacking leucocytes to storm the enemy's entrenchments." He thus adds another physiological action to the use of tuberculin which the writer has not seen reported by other observers.

Local Treatment. The local treatment of bone and joint tuberculosis may be, from a mechanical standpoint, likened to the treatment of fractures in that we first wish to overcome muscle spasm and strive for the most thorough immobilization of the part. As an example, take a tubercular knee. The early appearance of muscle spasm in the hamstrings pulling the knee into flexion, must be overcome and, later, through fixation obtained by a plaster cast extending from the toe tips to the trochanter. A cast extending a few inches above or below the knee would be manifestly insufficient.

Traumatism must be avoided in disease of a joint of the lower extremity not only by overcoming the intra-articular pressure incident to muscle spasm by traction at first in bed, but by preventing weight bearing with crutches and elevation of the shoe of the well side.

Weight bearing in spinal disease must be avoided by recumbency for as long a period as possible during the acute stage, and more or less insisted on during convalescence. In very acute cases, traction must be used on the head and lower extremities. The patient must be flat on the back and fixed in a *hyperextended position* at the point of disease (10). This latter point I first brought to the attention in 1895, and it is now generally adopted as one of the most essential principles to be aimed at in the treatment of Pott's disease both in the recumbent and convalescent ambulatory patient. Attempted fixation of the spine prior to this was largely done, and even to this day is occasionally aimed at by the application of a plaster jacket by the Sayre suspension method. This I have pointed out in a previous paper, does not accomplish hyperextension, and the profession at large should realize that a plaster jacket will not fix the spine above the 8th dorsal vertebra. For disease above that point the jury mast attached to the jacket is only a poor

makeshift which will not save your patient from increase in the deformity.

Fixation in bed in the hyperextended position should be accomplished by the plaster bed or jacket, by pads on a Bradford frame or by a brace properly fitted to produce *hyperextension*.

Bier's Hyperemia. (11). In disease of the elbow, wrist, knee and ankle, the daily application of the rubber bandage above the joint to produce slight venous stasis or Bier's passive hyperemia we have found very helpful and use it as a routine. We also use his cups over sinuses with the same end in view, by suction to increase the vascularity and phagocytosis.

Beck's Bismuth Paste. (9). For the past six months we have also used Emil Beck's hot bismuth-vaseline paste to inject all bone sinus cases, and certainly in fifty per cent. we have noted a more rapid healing. As pointed out by Beck, the course of the sinus can be clearly demonstrated by an X-ray of the bismuth injected, just as Rieder, of Munich, first demonstrated in 1904 the gastric curvatures by the rays. One is often amazed at the diverticula of a sinus as shown by the X-ray.

Beck states that two reasons are most often responsible for the non-healing of sinuses by his method; first, from not filling the sinus throughout with the paste, or, second, from a sequestrum at the bottom. Whether the hot paste is sufficiently antiseptic to kill the bacteria, or whether it acts as a framework to aid granulation or simply as a mechanical plug to keep out pyogenic bacteria is conjecture.

Secondary Tubercular Abscesses. However, the best way to cure sinuses is to prevent them. By this I mean that the hardest lesson to teach the profession at large is not to treat a cold abscess like an acute abscess, *i. e.*, by incision and packing. If a tuberculous abscess is opened and packed, infection will surely and invariably take place from the skin cocci in from twenty-four to forty-eight hours, no matter what your technique, and your patient, hitherto running a temperature of from 99 to 100 degrees, will immediately start a hectic chart of from 102 to 105 degrees with a sinus resulting for months and, possibly amyloid disease and death. I have never known a more fertile culture medium for cocci than the tubercular sinus. It is the secondarily infected sinus that

drains away the life of your tuberculous bone case, not the primary disease.

The proper treatment, if a cold abscess must be opened, is to make a small incision and suture immediately with firm compresses and bandage. Subcutaneous silver wire suturing is the best.

Abscess or non-abscess depends upon the thoroughness of your treatment of the bone focus, perhaps far away. The incising and leaving open of a secondary psoas abscess we will say, surely does no good to the primary focus in the spine.

Operative Treatment. The erosion or excision of joints in children should be done with the greatest hesitation and only in the most serious cases, for any removal of the epiphyses must impair the growth of the limb in length, so that when adult life is reached there is a pitiful shortening of the member. Of course, as pointed out by the writer in another paper, if pain, night cries and muscle spasm do not yield to thorough traction and fixation after several months trial, and if the X-rays show a progressive extension of the disease or a sequestrum, operative interference must be resorted to. In adults, however, operation for the removal of the diseased focus, except in spinal tuberculosis, is the treatment of choice as the promptest method of attaining a cure.

To summarize:

1. The X-ray is by all odds the best aid to the clinical diagnosis of tubercular bone disease.

2. The subcutaneous injection of large doses of tuberculin (one to five milligrams) in children, is to be condemned for diagnosis as unnecessary with the other means at our disposal, because harmful and possibly dangerous. Syphilis and leprosy also respond to these large doses.

3. Conjunctival or ophthalmo-tuberculin may cause corneal ulcers and serious eye inflammations in two per cent. of the cases and is, therefore, not to be used from choice.

4. The Von Pirquet skin resection is quite reliable, safe and valuable, especially in conjunction with the clinical symptoms and the X-ray in children.

5. Tuberculin T. R. in doses of from 1-1000 to 1-500 mgm. and the fresh air treatment should be used as a routine in all tubercular

bone and joint cases in an endeavor to immunize the patient.

6. Thorough fixation traction in all acute cases, and in the spine, hyperextension in addition, are of the greatest importance treating the local disease.

7. Bier's hyperemia and Beck's bismuth paste are valuable additions and adjuvants to treatment.

8. Tuberculous secondary abscesses should not be opened unless there is some decided reason therefor, and, if opened, should be immediately sutured tight after the pus is evacuated. Otherwise, a secondarily infected sinus will surely result with its train of unfavorable symptoms.

9. Operations on the tubercular joints of children should be avoided if possible; not so with adults.

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THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS OF THE TESTICLE.*

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Tuberculosis of the testicle, as seen by the clinician, presents one of several pictures:

1. The most favorable is one with a small nodular mass in the head of the epididymis that has been discovered by accident. It is painless, free from tenderness, and gives rise to no constitutional symptoms.

2. More commonly, the case presents a larger mass involving the head and body and part of the testicle proper. It is accompanied by a sero-purulent discharge from the urethra. There may be areas of softening in the mass,

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with open ulcers upon the scrotum and scars of others that have healed. The skin is adherent over the mass, and is greatly thickened and infiltrated. The cord is also often involved, and may present a roll as large as the little finger. Constitutional symptoms are well marked.

3. A far rarer condition, described by some writer as "galloping consumption" of the testicle, is occasionally met with. The constitutional symptoms here resemble in violence those of acute gonorrheal epididymitis, and might mislead one by their very intensity.

The three clinical pictures presented are not to be regarded as simply three stages that might be seen at three different periods in any given case, for the first is usually of far longer duration than the other two. We must regard them as the measures or grades of resistance to tubercular infection presented by the three individuals. This fact should be ever present when estimating the chances of recovery under any procedure, and in calculating the risk of dissemination in radical operations.

The progress that has been made in the early detection of tuberculous lesions of the lungs and other organs, and the results achieved in consequence, should stimulate us to earlier recognition of tuberculous infection of the testicle with a hope of corresponding improvement in our results in this condition.

Any case presenting a nodular mass in the epididymis, regardless of the absence of local or general symptoms, should fall under suspicion. Epididymitis of known gonorrheal origin, in which the hardened area is slow in disappearing, should be kept under careful observation.

Mumps of the testicle will bear watching from time to time, as two of my cases will suggest. An epididymitis occurring in a tuberculous patient should always be investigated even if a gonorrhea has existed, or is still present. Of 107 autopsies on tuberculosis patients, done at the Phipps Institute, Philadelphia, three showed tuberculosis of the testicle. As to the frequency of this condition, R. J. Howard, in the *British Journal of Children's Diseases*, reports 158 cases out of the 55,912 patients admitted to the London Hospital in a period of ten years. Nine of these were under twelve years of age; and cases are recorded at two

years, six weeks, and even in the fetus. The usual age is between eighteen and thirty years.

The diagnosis of a case with open ulcers upon the attached and infiltrated scrotum, or with a purulent urethral discharge, may be simply a question of cover-slip preparation, and one brief peep at the field. But such a case should have a more careful and painstaking examination, if possible, than that with only the small, indurated nodule. Investigation should not stop on simply making a positive diagnosis, but should be continued until every tuberculous lesion in the body that can be revealed, lies uncovered.

If the lungs, the kidneys, the bladder or the prostate are involved, operation might be contraindicated. That tuberculosis often occurs primarily in the testicle, is conceded by all authorities; and this should prove a strong incentive to early diagnosis with a view to early treatment before secondary foci are established.

Tuberculosis of the prostate and seminal vesicles is a frequent clinical accompaniment, either as a primary focus or a secondary localization. No case should be subjected to operative treatment without thorough digital examination of the prostate and vesicles, and ocular inspection of the deep urethra.

Any urethral discharge or strippings from the vesicles should be examined for the tubercle bacillus, due care being taken in the collection, to prevent contamination with smegma, which might lead to a dangerous error. The diseases with which it is likely to be confounded, in the absence of microscopic confirmation, are syphilis, malignant diseases and epididymitis from other infections.

The syphilitic gumma is rounder, presents no nodules, no sharp, hard edges. It usually begins in the body of the testicle. The absence of a syphilitic history or specific lesions elsewhere, coupled with a short therapeutic test, if needed, should easily eliminate this condition.

Malignant tumors will seldom present a history so long in duration as tuberculosis. Other parts of the testicle than the epididymis are affected, and the constitutional symptoms are lacking.

To make a differential diagnosis in a case of gonorrheal epididymitis in which the inflammatory infiltration has been unduly long

in resolution, may prove a difficult matter from the history and physical and microscopic findings. The tuberculin test in such cases, or in any of the foregoing, in the hands of one accustomed to work with bacterial products, will prove a positive and final method of diagnosis. To obtain the general reaction of fever, malais, etc., is not sufficient, for this might only indicate an active tubercular process elsewhere in the body, or that one had existed years previously. When properly administered in small dosage, positive local reaction, pain, tenderness or redness, in the case of the testicle, can be obtained. This precedes the general reaction, for it is by provoking the local inflammation at the seat of the lesion that constitutional symptoms are made to appear. In cases that are doubtful, the local reaction from tuberculin should make conclusive the diagnosis.

Treatment. That spontaneous healing of the tuberculous testicle is possible, cannot be denied; but to hope for such a termination even with climatic, dietetic and hygienic treatment, would hardly be considered justifiable treatment by the most earnest advocates of the out-of-door-methods.

Injections.—Solutions of iodine and other antiseptics, and emulsions of iodoform have been tried in this condition by different operators, with varying degrees of success. They have failed to impress the profession with any marked advantage over other methods. An Italian recently reported twelve cases in which the patients were restored to health and good spirits by injections of one per cent. solution of iodine in water, with iodide of potash, beginning with a few drops and gradually increasing the dose, which he diffused widely through the infected tissues. Thirty doses were sufficient for a case.

The X-Ray.—James Bullitt, of Louisville, reports twenty-one cases treated with the X-Ray, of which seven were cured, ten improved, and nineteen unimproved. The limited depth of the disease from the surface would seem to make it an ideal treatment in this location; but when the by-effect of the ray is fully appreciated by the laity, it will not be apt to grow rapidly in popular favor.

Treatment with Bacterial Products.—G. T. Western, in the *Lancet*, November 23, 1907, states that the use of tuberculin has, in his

hands, proven almost universally satisfactory in these cases. It is too early yet to state definitely what can be done with these products, but I believe that through them is to be evolved the treatment of the future, and that this will be combined with surgery, preceding it, to raise the resistance of the patient, and following it to prevent dissemination.

Surgical Treatment.—The conservative operation of resecting parts of the epididymis are seldom indicated, as they are applicable only to cases of very limited involvement. If done on the more advanced cases, function is not only lost, but there is far more danger of local recurrence than when the entire organ is removed.

When the visceral and parietal layers of the tunica vaginalis are adherent and soft, cascating or suppurating spots can be felt, it is the part of wisdom to open, curette and pack these cavities as we would treat similar tuberculous lesions elsewhere. This is but assisting nature, who has expressed her willingness to help, in terms of localization.

Radical Operations.—Castration is indicated when there is reasonable hope of complete removal of the disease, or to remove a suppurating mass from which absorption is going on to such an extent as to make its continuance a danger. The complete removal of the testicle, its cord, the seminal vesicle, and the infected prostate by combined inguinal and perineal incisions is one that does not appeal to me, though Dr. Joseph A. Blake reports a case in which at three successive operations, the left kidney, ureter, the left testicle, both seminal vesicles and most of the prostate were removed for tuberculosis, and three years later the patient is apparently well. I have rather regarded prostatic and vesicular involvement as a contraindication to operation, for it seems almost certain that the remaining testicle will also become involved.

The most favorable class of cases is that in which there is much fibrous tissue raised as a barrier around the focus of infection, and, in consequence, little or no constitutional disturbance. In other words, the patient with the greatest natural resistance is the most favorable for treatment. If it be possible by means of the bacterial products, to increase the resistance of the less favorable case until it pro-

sents the clinical aspects of the most favorable, even if we cannot pursue the treatment to its logical conclusion, and effect a cure, we will have gone very far and accomplished much.

The question of procedure in cases with both testes involved, or when removal of one is followed by infection of the remaining organ, is one for mature deliberation. Many operators advise positively against the double or second operation. As to the results of operative treatment, I quote from Ludwig Berger, who reports seventy-seven cases, gleaned from the literature of the last twenty-five years. Of thirty-five unilateral castrations, twenty are now living, and ten have died; of nine bilateral castrations, six are well, three have died, three partial resections all well.

Without going into a detailed description of castration, I would call attention to several practical suggestions in technique. It is well to go high up the cord, even to the internal ring. The tunica vaginalis should always be removed with the testicle. The tunica vaginalis should not be opened prior to removal from the scrotum, especially if it contains much fluid, for this may be infectious. If the testicle and its tunic are together peeled from the scrotum as in the bottle operation for hydrocele, there will be not only less bleeding and trauma, but it can be much more quickly accomplished. This will also permit the opening of the tunica vaginalis outside the scrotum without fear of contamination, if it is thought wise to inspect the testicle with a view to possible conservation, or to make certain the diagnosis. When the testicle is honeycombed with abscesses, or is a soft, boggy mass, it is best to go first to the internal ring, to isolate the cord, cut it between ligatures, and strip it out from above downward. This will minimize the possibility of dissemination from rough handling, which might force the infection into the open veins and lymphatics, if we work from below upward with the cord intact.

Before reporting the several cases which I have selected to illustrate the different phases of this disease, I would earnestly urge that in all operations upon the testicle for suspected tuberculosis, whether radical or conservative, the specimen be submitted to a competent pathologist for a full report. This will not only finish the case for literature, and make subse-

quent reports as to the progress of the case of real value, but it will teach us to think in new lines. The evidence of resistance, or lack of it, expressed in tissue changes, will be seen to keep such accurate tally with the constitutional symptoms that, seeing the specimen or the patient alone will give one a fairly accurate idea of what the other will be.

Case I.—A strong, robust man of twenty-seven, of healthy parentage, gives negative family history. Has one child, two years old, (twins were born two months after his operation), and had mumps ten years ago, which affected the right testicle; has had repeated attacks of gonorrhea, and orchitis of the right side. For five years has noticed a small, slowly growing lump in the epididymis of the right testicle, which gave no pain or discomfort until two months ago. His occupation of traveling salesman keeps him on his feet most of the time. His suspensory, which at first kept him entirely comfortable, now gives no relief, and the tumor is growing rapidly. *Examination* shows no urethral discharge, no prostatic or seminal vesicle involvement, no constitutional symptoms, no loss of weight. A hard, nodular mass, the size of a hen's egg, back of the testicle itself seems small. *Diagnosis*, tubercular epididymitis.

Operation—High castration with complete excision of the tunica vaginalis, done January, 1907.

Gross appearance of the specimen: A large hard, nodular mass in the region of the epididymis; section shows normal structure, replaced by scar tissue; body of testicle normal in appearance. *Microscopic examination* by Dr. E. Guy Hopkins: Typical tubercular structure, but well walled off by a thick, protecting bulwark of fibrous tissue.

I examined the patient October 11, 1908, one year and nine months from operation, and found no evidence of return locally, or of involvement of the other side. He is in excellent physical condition.

The macroscopic and microscopic findings in the specimen harmonize faithfully with the clinical history of slow growth without constitutional symptoms in this robust, vigorous individual.

Case II.—Young man of twenty-four; occupation, clerical work. Family history: No

tuberculosis. Never had gonorrhea or syphilis. Two years ago, during an epidemic, was taken with mumps, which also affected one of his testicles, putting him in bed for some days. The testicle never became normal, but was hard and swollen, and gave pain unless supported. *Present condition:* A tall, thin, anemic fellow, looking like a consumptive; considerably underweight; suffering from malaise; has no night-sweats; temperature, 100 1-2; no cough, nor evidence of lung involvement.

Physical examination: A hard, rigid tumor involving the epididymis and the testicle proper, the whole being twice the natural size. It is not nodular, nor very tender to the touch. There is no urethral discharge; the prostate and vesicles are not involved; the urine contains no pus. There is no stricture, but a little blood on passing a full-sized sound. *Diagnosis:* Tuberculosis of testicle. *Operation,* October 22, 1907: Castration by high incision up to the internal ring; removal of tunica vaginalis; closed without drainage. Primary union. Patient left hospital on tenth day, with normal temperature. Physical examination, by Dr. J. G. Nelson, showed no involvement of the lungs.

Gross appearance of specimen: Epididymis and gland tissue destroyed, the whole appearing as a necrotic mass. *Microscopic examination,* by Dr. E. Guy Hopkins: Large areas of confluent, multiple tubercles, the centers showing cheesy degeneration; the edges showing typical epithelioid cells and a few giant cells; excessive round-cell infiltration; very little new fibrous tissue.

Subsequent history. Patient returned from the country greatly improved in appearance, having gained fifteen pounds in weight. He returned in March, 1908, with involvement of the epididymis of the opposite side. I advised against operation, as did my consultant, although the patient was anxious for its removal.

He applied again in April, this time with high temperature, rapid pulse and marked emaciation, with the local condition still worse. He insisted on operation, as the organ was functionally useless; but with a picture of the specimen in my mind, evincing so little evidence of protective effort on the part of his tissues, and this also in accordance with his constitu-

tional symptoms, I did not believe the operation justifiable. He was put to bed, and I called in Dr. W. H. Coffman who, after thorough examination, now discovered slight involvement of the apices of both lungs. Treatment with the watery extract of tubercle bacilli was begun. Rest in bed soon lowered the temperature and bettered the general condition; and he was sent to his home in the country, where the treatment is still continued.

In July, he wrote that while his general condition is much improved, the local condition is apparently no better. In a letter of September 30th, he answers a series of questions as follows: Temperature has not been over 100 degrees; normal for three or four weeks, until extreme hot weather came on; it is now normal again, or nearly so. No cough or evidence of lung involvement. Appetite and digestion good; is much stronger. No evidence of return in scar; no enlargement of stump of cord, nor the inguinal lymph nodes. Testicle somewhat smaller and remains hard; no softening; areas seem smoother, and is tender in places. Functionally, some improvement, as evidenced by erections. Suppuration of a small supra-clavicular node slow in healing.

This case is the direct antithesis of the one just reported. His first operation was justified in order to remove the necrotic mass from which absorption was taking place with such depressing results. If the present treatment does not effect a cure, I am in hopes that it may so increase his resistance that a second conservative, or radical operation will not be followed by an outbreak elsewhere.

Case III was untreted; and I report it briefly from memory, as it illustrates either a rekindling of a long latent tubercular infection, or shows the rapid ravages of the disease in one peculiarly susceptible.

A man of thirty, practicing physician, had hip-joint disease at an early age; recovered with some deformity, but a good leg. Practised in the country, and lived an out-door life. He came to Dr. McGuire, at St. Luke's Hospital, with all the typical symptoms of tubercular epididymitis, including the urethral discharge with numerous bacilli. His prostate was much involved. He declined operation, which was suggested, but not urged. A few months later he developed cystitis, and then

pyelitis, and returned to the hospital in bad shape, with high fever, and evidence of virulent infection. A week later, he developed meningitis, from which he soon died.

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DIAGNOSIS AND TREATMENT OF PNEUMONIA.*

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Diagnosis of Pneumonia.—The diagnosis is determined by special local and general symptoms, together with the physical signs. The abrupt onset with rigor, the course of fever with termination by crisis, the abnormal pulse, respiration ratio, the cough, the rusty expectoration, and signs of lobar consolidation, are the most characteristic symptoms.

Repeated physical examinations of chest will often detect consolidation in the absence of the accustomed symptoms; again, when in the course of some chronic affection, as cancer, Bright's disease, diabetes, and organic affections of heart, fever is developed and physical exploration of thorax is imperatively demanded.

Differential Diagnosis.—This relates to acute pneumonic phthisis, pneumo-typhoid, meningitis and acute pleurisy with effusion. Since Dr. Greiner has so thoroughly gone over clinical history and symptoms, I feel it unnecessary to give much time to diagnosis.

From statistics we find the mortality from pneumonia is nearly, if not, as high to-day, as it was years ago, while the death rate from most all other diseases has decreased. These facts teach us three important lessons: First, that more attention should be paid to the prevention of the disease; second, that the present-day treatment is woefully ineffective; third, that a more effectual treatment is demanded.

Pneumonia as a distinct disease has been known for more than a century, and its bacteriology understood for more than twenty years; yet the treatment of to-day seems very little more effectual than years ago. The present day treatment is symptomatic and expectant. Anodynes are given for pain, antipyretics for fever, heart stimulants for cardiac weakness, expectorants or sedatives for cough, nutritious food and tonics to support system, etc. It is true there is a tendency now to get

away from too much medication by an endeavor to invoke the aid of hygienic conditions. The object sought is to assist nature's attempt to overcome the disease by conserving the best physical condition of the patient. To this end, the patient is placed in a well ventilated room, under the most favorable surroundings, diet is regulated, and he is kept under as restful conditions as possible. Yet little attempt is made to strike at the root of the trouble. Being merely symptomatic and not specific, is it any wonder the treatment is so ineffectual?

Various antiseptics have been strongly advocated from time to time, since the bacterial nature of pneumonia has been established; creosote, phenol, guaiacol, and many others have been used, but have proved of little therapeutic value. It is impossible to render the blood antiseptic by the use of chemical substances without jeopardizing the patient's life; neither can you reach the foci of infection in the lungs by inhalation.

It would seem that every available medicinal treatment has been tried, but with meager success; therefore, it is quite evident that the conquest of pneumonia waits on biologic therapy. The gratifying success attending the employment of serum therapy in diphtheria and other bacterial diseases has inspired hope that soon a serum for all other acute infections will be discovered.

Prophylaxis.—The question of the prevention of pneumonia is a difficult one, which has hardly yet come within the sphere of practical knowledge. More care should be taken with pneumonic sputum than has been done heretofore—it should be carefully disinfected. Individuals who have had pneumonia should be careful to keep the mouth and throat cleansed, and any house in which there has been a bad case or several cases should be disinfected.

Abortive Treatment.—Petresco has found that large doses of digitalis administered at the onset would cut short the disease, but Anders says the cases in which he had adopted this plan had failed. The plan seems rational since it aims at meeting the chief pathogenic indications by passing through the lung tissue an adequate proportion of leukocytes, and thus re-establishing the cardio-pulmonary circulation. Tincture veratrum 2 to 5 minims every two hours is credited with the power of reduc-

*Read as one of two papers of a symposium on pneumonia before the Southwest Virginia Medical Society at its fourteenth semi-annual meeting, held at Bristol, December 3-4, 1908.

ing the intensity and shortening the duration of the attack. I have used veratrum in a few robust cases, with regret in a majority of them.

Osler says pneumonia is a self-limited disease, which can neither be aborted nor cut short by any known means at our command. Yet, under the most unfavorable circumstances, it may terminate abruptly and naturally without a dose of medicine. Also, under favoring circumstances of good nursing and careful diet, the experience of many physicians has shown that pneumonia runs its course in a definite time, terminating sometimes spontaneously on third or fifth day, or continuing until tenth or twelfth day.

There is no specific for pneumonia, and I believe more patients are damaged than helped by the promiscuous drugging, which is still only too prevalent.

General Management.—The patient should be isolated in a well aired room at a temperature of sixty-five degrees Fahrenheit. Fresh air constantly breathed improves appetite, lessens cough, diminishes temperature, pulse and respiration rate. In short, a less marked toxemia is observed. The room should be bright, letting in sunshine, if possible; better to have single bed, not too high. The patient should **not** be bundled up with clothing—a flannel jacket or gown is plenty; with this the physician can make examinations without disturbing the patient.

In severe cases the constant presence of physician is required. The patient must be kept at perfect rest, and not allowed to leave bed for at least one week after crisis. The least furniture in room the better, and in cleaning room be careful about dust.

Diet.—This should be light, chiefly liquid, but nutritious; milk should constitute main article of diet, broths or meat juices, albumen and lemon albumen, plenty of water and lemonade should be given. The food should be given at stated intervals and in definite quantities. Alcohol has some food value, and is good given with milk or in form of eggnog. It lessens waste and improves appetite and digestion. It obviates the tendency to heart weakness, and is a conservator of energy. It should be given in small amounts, two or three ounces daily. While it is good for even more than mentioned, I think we can easily do without

it. When resolution is delayed stronger nourishment may be given, as scraped meat, etc.

Medicinal Treatment is that of toxemia. Calomel in small doses, or saline laxatives in early stage is important; subsequently, the liver and bowels must be kept acting freely to eliminate waste products and toxins. The action of kidneys is best maintained by plenty of water and skin by sponge baths.

The pain, when of an acute agonizing character, is best relieved by hypodermic of morphine. If bronchi contains mucus, etc., morphine should not be used, since it favors accumulation rather than removal; here a Dover's powder in five grain doses, repeated as necessary, is better. When pneumonia is fairly established the pain is not, as a rule, distressing, only on coughing; for this, hot or cold applications are best, or one-fourth grain doses of codeine. Cough during early state is controlled by morphine, given to combat pain; later, if any anodyne is necessary for cough, I prefer codeine in one-fourth grain doses. In more advanced stages, with rales and scanty expectoration, stimulating expectorants may be employed with good effect; such as ammonia muriate, terebin, etc.; ordinarily the cough mixtures do more harm than good, and by keeping chest well protected, we do not need much for cough.

The fever of pneumonia, Anders says, is a temporary affair, and instead of being hurtful, may prove beneficial, since it furthers tissue metabolism, and this aids in destroying the specific poison. However, high and prolonged pyrexia with marked nervous symptoms, dyspnea, cardiac weakness, demand something to reduce and relieve; for this our most trusty weapon is hydrotherapy, which can be used in several ways; the ice bag to affected side is commended and serviceable for pain and fever; also ice cap on head and abdomen, and sponging limb by limb good. This does not disturb and is refreshing and beneficial to patient, although hydrotherapy is hard to use intelligently in all cases.

Internal antipyretics are not so largely used at present, as was formerly; while they possess power to reduce temperature, their use is attended with danger from the action on heart. Still, in the robust, with high fever in beginning I use a tablet containing acetanilid, salol and quinine, one grain each, every four hours.

for its antipyretic, amodyne and sedative effect, but when you find the patient will be sick long, I think it best to leave off all such and depend on ice bags, etc.

To Combat the Toxemia.—Herein lies our chief weakness. We have as yet no specific, either drug or the product of bacteriological laboratory, which safely and surely neutralizes poison; so we must aim to keep up patient's strength in his fight against the progressive toxemia.

The all important indication is to support the heart; the physician must ever be on the alert to prevent the onset of cardiac weakness, and to treat it, should the condition arise.

Cardiac stimulants are indicated in nearly every case, and it is well to begin their use early, especially in the old and asthenic cases. You can begin with either alcohol or strychnine or both in moderate doses, to be increased as occasion demands; as when the pulse becomes small, frequent and feeble, or compressible, and when the heart sounds, particularly the second pulmonic begins to lose their force, you should push strychnine, one-thirtieth grain every four hours; should urgent need of stimulation arise, strychnine should be administered hypodermically from one-thirtieth to one-fifteenth grain every three or four hours; as soon as the condition of heart denotes restoration of cardiac power, the size of dose should be reduced. In no other disease does strychnine and alcohol possess greater potency for good than in pneumonia. They lessen the depressing effects of the poison. In severe forms of pneumonia, digitalis is invaluable during advanced stages. It may be given in doses from five to fifteen minims of tincture every three or four hours. When there is cyanosis, increasing shortness of breath, small and feeble pulse, my choice of stimulants is nitroglycerin, digitalin and strychnine, either by mouth or hypodermically, as the case may demand.

Saline injections intravenously or subcutaneously are valuable in overcoming falling blood pressure with toxemia. One to two pints may be given and repeated in eight hours, if necessary.

Beginning cyanosis is the signal for respiratory stimulants, of which the best is strychnine and atropine, given hypodermically. Many claim inhalation of oxygen given freely often serves to tide over periods of marked cyanosis.

I have never used it, and would be glad to hear the opinion of others, and their experience with it.

Local Measures.—Counter irritation by use of sinapisms is useful at onset. The cotton jacket has certain advantages in maintaining free, local action of skin and protecting chest.

Cold in form of the ice bag or compress, wrung out of water at temperature of sixty degrees Fahrenheit is good for pain and congestion. Warm applications in many cases are advantageous, and for children. I think antiphlogistine fills our want better than anything else, not being difficult to apply, and as it does not need changing often. It loosens expectoration, eases pain and supports chest. The disadvantages are: it is dirty and expensive.

Venesection.—No doubt this is a good remedy at the very onset in robust, healthy individuals, when pneumonia sets in with great intensity, high fever, pain, dyspnoea and nervous symptoms, but is not so much used now as formerly, because we find if it does not cut short the disease, the loss of blood renders patient unable to stand long attack.

Anders says later in the course of pneumonia bleeding may be resorted to, if cyanosis and signs of collateral pulmonary edema, due to a failing heart arises, but at this period bleeding rarely yields good results, except in vigorous subjects. Some claim bleeding retards resolution.

Serum Treatment.—Washburn, Payne, and others have reported favorable results from the use of anti-pneumococcic serum; on the other hand, many physicians who have used the serum are skeptical as to its therapeutic efficiency. I have used it in two cases and do not think it did any good in either, and certainly no harm, only the pain it caused while using.

I notice Frederick Stearns & Co. have a serum, called the pneumolytic serum, which they claim differs from anti-pneumococcic serum, different in method of production, different in nature and different in result. For instance, pneumolytic serum contains diphtheria antitoxin; diphtheria antitoxin promotes leukocytosis, and leukocytosis aids destruction of pneumococci in blood, which favors recovery from pneumonia. They assert that when used early it promptly improves the general condition of patient, makes him more comfortable and easy.

reduces temperature, improves pulse and respiration; in short, checks the intensity, and brings about a rapid recovery in all forms of pneumonia.

DISCUSSION OF THE DIAGNOSIS, TREATMENT AND PROGNOSIS OF PNEUMONIA.*

By T. JEFFERSON HUGHES, M. D., Saltville, Va.

The diagnosis of pneumonia being usually unattended with difficulty, and the affections to be considered in the differential diagnosis having been gone over by Dr. Dunkley, leaves little to be said of this phase of the subject.

One point worthy of emphasis in the recognition of the onset of pneumonia is the frequency with which it occurs as an intercurrent affection in the course of other diseases, particularly chronic diseases, such as chronic nephritis, diabetes, locomotor ataxia, tuberculosis, emphysema, etc. In these cases it often precipitates, and is the ultimate cause of death. Points in the differential diagnosis between pneumonia and the most of these diseases have been clearly brought out, and these remarks are only to emphasize the importance of being on the alert to recognize the onset of its symptoms, which in some cases is difficult. In emphysema it is difficult at first, owing to the indefinite character of its physical signs, due to the failure of inflammatory exudate to completely fill up the greatly distended air vesicles, limiting the consolidation of the inflamed area.

In the discussion of the treatment of pneumonia, I am impressed with the fact that the ground has been thoroughly covered, and the approved line of treatment has been clearly set forth in the paper just read by Dr. Dunkley.

As has been rehearsed in this meeting, the etiology and pathology of pneumonia was definitely determined a quarter of a century ago, yet the treatment of to-day is no more effectual and, in fact, differs little in principle from that in vogue prior to the discovery of its primal etiological factor.

That the mortality is as high, or higher, to-day than at any period in its history, can be accredited to one of two things: Either that science has not advanced in the principles in-

involved, or, that we have heedlessly ignored its teachings.

Scientists unanimously agree that medicinal antipyretics are invariably harmful, yet do not a majority of physicians depend solely upon their administrations to control the fever?

In the absence of specific remedy to neutralize the poison produced by the pathological process, is not the most rational safeguard to be found in eliminating the toxin as rapidly as possible? Then, do we not violate the most salient principle of this treatment when we lock up the organs of elimination by the use of morphine, opium, or any of their allied compounds?

Is it not a fact that we approach pneumonia with fear and trembling, realizing in ourselves those anxious presentiments which the greatness of the charge and weakness of our powers so justly inspire, and under the combined influence of anxious entreaties for relief and our inefficient armamentarium to cure, do we not too often shoot expectantly at symptoms, and in the multiplicity of doses weaken the vital forces which are being invaded by the toxemia? And the battle thus waged is between the strength and resisting powers of the patient on the one side and the disease and the doctor on the other. Surely, the two great principles involved in the treatment of pneumonia are to neutralize the poison and support the vitality of the patient.

While the possibility of the former seems dependent upon the future development of biologic therapy, the latter may be best conserved by a strict adherence to the laws of hygiene and a general supportive treatment which has been clearly outlined in the foregoing paper, and which will, of necessity, vary to suit each case. The employment of a few drugs, the physiological action of which the physician is thoroughly familiar with, is a signal for success in the treatment of pneumonia. The general management and prophylaxis, which was outlined by Dr. Dunkley, are important observations in the handling of these patients.

The diet is important, in that we should certainly avoid indigestion and flatulence.

Since pneumonia is a general infection, with a localization of the infecting principle in the lung, it appears that local treatment is of little value, aside from the relief of symptoms, such

*Read in opening discussion of paper on Diagnosis and Treatment of Pneumonia by Dr. J. H. Dunkley, of Saltville, before the Southwest Virginia Medical Society at its fourteenth semi-annual meeting, held at Bristol, December 3-4, 1908.

as pain, hyperpyrexia, nervousness, etc., and to promote resolution.

Elimination should be favored by free action of the bowels, kidneys and skin.

The initial dose of calomel, repeated at intervals, as indicated, serves to eliminate waste products, stimulate all of the secretory organs, and to disinfect the alimentary canal.

Strychnine, given early in small doses and increased as indicated, is perhaps the most valuable cardiac support, but certain cases, where the heart seems to be laboring from engorgement, and the outcome seems to depend on the ability of the right heart to move the mass of blood through the lung, nitroglycerine may be of value in lessening peripheral resistance.

I shall not enter into a discussion of the merits and demerits of the long list of remedies employed in treating the various types of pneumonia. They are familiar to all and, being non-specific in action, necessarily vary with the empiricism of the physician, and individuality of the patient.

Personally, I prefer to use few drugs, and these to support the patient and favor elimination. Use local applications to relieve pain, protect the chest, and control hyperpyrexia with hydrotherapy.

The day is perhaps dawning when we will possess a specific which will as effectually rob pneumonia of its terrors as serum-therapy has bridled diphtheria, and made easy its prevention and cure.

Such a contribution will be no less a boon to the profession than was the discovery of vaccination as a preventive against smallpox, which made the occurrence of once a frequent and loathsome disease a subject of comment and criticism.

Prognosis.—Observing statistics, we find little, if any, encouragement in the rate of mortality now, as compared with twenty years ago. In fact, the consensus of opinion of authors indicate that it has gradually increased, and that the figures giving the rate of mortality are very conservative.

Walsh claimed about twenty years ago that age had the most important bearing in the prognosis; that the disease was most always fatal in the newly born, and after seventy. The same is true to-day. This same author averaged the death rate between the ages of twenty

and seventy at from one-fifth to one-seventh, claiming that between the ages of six and twelve nearly all recovered,

The statistics of to-day indicate the general rate of mortality up to the age of sixty years to be from twenty to thirty per cent., and from fifty to eighty per cent. after the age of sixty. A comparison of the figures clearly indicate that the treatment of pneumonia has not advanced *pari passu* with that of other diseases.

CARCINOMA OF BREAST.*

By HUGH M. TAYLOR, M. D., Richmond, Va.

Professor of Clinical Surgery, University College of Medicine, etc.

In this city, and hardly beyond the sound of my voice, there exists an institution for the cure of cancer which was established by, and is presided over, by a man who, as far as I know, does not claim to be a doctor; and yet I am willing to venture the opinion that there are at this time under treatment in that institution more cases of cancer than are treated by any three surgeons in this audience. Why is this true? And what should we do to remove this shameful reflection upon the regular medical profession, is the mission of this paper.

A moment's thought will bring into prominence the deep-rooted conviction, in the minds of the uninitiated that cancer is incurable, and any one who will advertise that he can cure it, and without the dreaded knife will be received as one surely inspired. Is it not true that in our efforts to be strictly ethical, we have been remiss in not making it known beyond all question, not only that cancer is curable, but that it is more certainly cured by members of the regular profession? Since we have not enlightened the public, we should not be surprised at its ignorance of this subject. Not until we educate the public can we hope for active co-operation. Note the ready response in the fight against tuberculosis, typhoid, yellow fever, cholera, etc. What a blessing if we could inaugurate such a congress for the study of cancer as has just been held in Washington. By seeing the exhibits, by hearing the addresses and by reading the reports of the Congress in the daily papers, millions have been educated as to tuberculosis. How few know anything about cancer! I ven-

*Read before the Medical Society of Virginia at its thirty-ninth annual meeting, held at Richmond, October 20-23, 1908.

ture the opinion that if on the streets of Richmond you stop ten of the most intelligent looking laymen you meet, and ask them if cancer is curable, nine out of the ten will answer no.

Some time ago as I left home to attend a society meeting, a member of my own family said to me, what are you going to talk about? I replied, "cancer." "What is the use," she rejoined, "you can do nothing for it. You only make people nervous about it." Recently a friend said our minister (a man of culture) is much interested in a poor patient under treatment for cancer by Mr. Blank. "You know he puts on a plaster and draws it out by the roots." One of our local papers, an educational medium of acknowledged value, in discussing the beneficent outcome of the recent tubercular Congress held in Washington, commented upon the fact that tuberculosis, unlike cancer, is curable.

The importance of educating the public along the lines I have mentioned is no new theme. Some of the best medical men of our times have thought it worthy of their best efforts, but what they have said and written has not reached the public and the masses remain in ignorance of the fact that we are curing thousands of cancers. The triumphs of preventive medicine are our pride in many fields, but in this, it is powerless, and cancer to-day, as it has done in all time, mocks our efforts to prevent its frequent occurrence. We are even powerless to stay its alarming increase. In the prevention of cancer we have done nothing. In the cure of cancer we have triumphed to an extent of which we should be proud and it is our duty to let the victims of this horrible and wide-reaching scourge know of our ability to help them.

The United States census report for 1890 records 18,500 deaths from cancer; in 1900, ten years later, the death rate had assumed the enormous proportions of 29,500, an increase of nearly thirty per cent. in ten years—three times as many deaths as from all railroad accidents; more than from all the complications of childbirth; more than from lock-jaw, hydrophobia, sunstroke, all joint diseases and appendicitis combined. In Vienna it is claimed that it kills one woman in eight, and one man in twelve who reach the age of thirty-five. What is true of Vienna is true of Virginia. Is it cruel to remind you that one in twelve of the

men before me, who reach the age of thirty-five, and that one in eight of your wives and daughters will be victims of this relentless destroyer of life?

That cancer is primarily local, that it is curable notably in its early stages, that it is difficult to diagnose in its incipency, and is relentless in its demands on the patient's life unless treated radically are facts we should vigorously and unceasingly impress upon professional men and laymen. Think of it, 3,600 deaths from cancer of the breast in the United States every year. Recall the fact that ninety per cent. of tumors of the breast in women past thirty years of age are or will become malignant. I endorse the dictum of a master surgeon when he claims that "no tumor of the breast will ever be more benign than when first seen, and no tumor of the breast can be so benign that it may not become malignant."

Much as I should like to do so I shall not impose upon you a discussion of the etiology, symptomatology, diagnosis and technique of the treatment of cancer of the breast; its voluminous literature is at the command of you all. What has been accomplished can be accomplished; what others have done we can do. What has been done in cancer of the breast is well summarized by Dr. Crile in his address to the surgical section of the American Medical Association. This summary is based upon the published reports from the Hopkins.

"Forty-seven per cent. of all cases of breast cancer operated on have remained well three years or more. Considering only the cases that seemed at the time of operation to be clinically favorable, seventy-five out of every hundred were cured. A group of cases still more impressive is that consisting of those in which a clinical diagnosis of cancer could not be made prior to operation. Of these ninety-six per cent. remained well for three years or more. The operative mortality in the representative clinics to-day is less than one per cent."

I repeat, what others have accomplished we can accomplish, and such results fully warrant the dogmatic claim that surgery has triumphed in this field and it is our duty to let humanity know it.

Contrast these with other acknowledged facts as to cancer of the breast, not mercifully and

quickly but through painful days, nights, weeks, months and years, it exacts the life of its victims. Eighty-seven per cent. of breast tumors are malignant; ninety-six per cent. are curable by sufficiently early operations; an operative mortality of less than one per cent. Only one in fourteen of breast tumors are benign, and in view of this last statement, are we justified in splitting hairs by trying to make a differential diagnosis? Curable in its incipency, it yet entails a mortality of 100 per cent. when neglected. Medical men who study this subject know the possibilities of surgery. I contend that we should make it known to the poor sufferers that they can be cured by prompt treatment in ninety-six per cent. of cases.

FREQUENCY OF THE ABSENCE OF SKIN LESIONS IN SYPHILIS.*

By EDWARD D. STARKE, M. D., Norfolk, Va.

From the earliest history of medicine syphilis has been recognized, and its course and symptoms described as now. Very little advancement has been made by investigators beyond the discovery of a specific for its cure. The early history of the disease is obscure, but ancient writers describe a condition undoubtedly syphilis, and before man had fully emerged from his primal state the "Black Plague" had its terrors.

The Egyptians suffered many times from outbreaks of syphilis and the Jews were instructed and given laws by which the disease could be recognized and stamped out.

In 1494 we find the first accurate description of syphilis, and then the disease was regarded as a skin affection caused by impurity of the blood, and was believed to be incurable. In the last century we were first taught that syphilis is a constitutional disease, affecting different tissues. Various investigators have tried to ascribe syphilis to the operation of a bacillus, and two or three have been selected and abandoned. Lustgarten in 1884 describes one resembling the tubercle bacillus. Others have attempted to isolate the bacillus, but as yet cultures have not been successful and it must be admitted that there is still much doubt on the subject.

We are now taught that syphilis is a highly

contagious disease, due to inoculation by a specific virus, or by hereditary transmission. This virus must gain entrance to the blood through an abraded surface. After a period of incubation of from one to three weeks, usually twenty-one days, a characteristic sore—the "initial lesion"—appears at the point of inoculation. Next to that, after a period of from six to eight weeks, a peculiar rash appears, to be followed later by sores involving the true skin, known as syphilides. It is this point, the appearance of the rash, that brings me to the subject of this discussion.

Syphilis can, and does, exist without skin manifestations in fully thirty per cent. of cases; and the reason the majority of physicians fail to make a correct diagnosis in obscure cases is because they have been taught to look for extensive glandular involvement and skin lesions when the former may be unappreciable, and the latter, entirely absent in a true case of syphilis.

Syphilis, like tuberculosis, has points of selection. Thus we may have:—syphilis of the lymphatic system, the primary channel of invasion, and secondary to this we have, syphilis of the skin, of the mucous membranes, of the osseous system, of the nervous system, and even of the vascular system and the viscera—the point of selection being in proportion to the vulnerability of the tissues. The lymphatic glands are often suppurating. First in frequency we see the skin lesions; next to this the mucous membranes are affected; next the osseous tissue, first in the cancellous portion and later in the solid bony structures. These lesions usually come on late, during the gummatous stage, when the nervous system and viscera become affected. Syphilis may go unrecognized until late in the tertiary period, and the first evidence the physician sees may be a broken down nasal septum or gummatous brain. I have among my records, a case of this description. About three years ago a man came to my office with a typical chancre. I did not tell him the nature of the sore at the time but told him that I would see him from time to time and let him know its nature later. Under treatment the sore healed rapidly and I took pains to watch the patient very carefully, but although I saw him nearly every day for over a year, there was never a sign of a rash or

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syphilides. Sixteen months from the time of infection he came to me again with a very badly necrosed nasal septum, and an opening of considerable size from the nasal into the oral cavity. Not only this but other extensive bone lesions indicated a very far advanced tertiary syphilis. Now in this I had a case, suspicious from the first, and yet under most careful surveillance, showed no skin lesions. The subject is a hard working man and I had every reason to believe that his statements that he had no previous syphilitic history was true. Under antisyphilitic treatment he improved but was not entirely well when last seen.

Another case of interest was that of a youth of eighteen. He came to me with a suspicious sore, and on questioning him I found that his only sexual companion had been a young woman, who was at that time under my treatment for syphilis, and as the case occurred in a small village, the chances of his getting infection elsewhere was entirely precluded. I treated the sore and watched him carefully for skin lesions but none appeared, although there was fairly marked glandular enlargement. In four months and eight days, he returned to me with syphilitic tonsils and several mucous patches in the mouth. This responded to the mercurial treatment and after a year's treatment I lost sight of him but have heard since that he kept up the treatment and was cured.

In my experience among the Negroes of this city and elsewhere, I find many cases of long standing, who have never had any rash or syphilides, but do show the most marked involvement of the nervous and osseous systems, and respond readily to antisyphilitic treatment. I have seen many cases in females in whom the only sign of syphilis would be the general adenitis and venereal warts. One of my colleagues who has had extensive experience among these cases has records of a number of similar cases.

I mention these cases as types to show that syphilis very often goes into the tertiary stage without showing any of the so-called secondary skin symptoms, and that the absence of syphilides is by no means conclusive evidence that the subject is not a syphilitic.

A subject once seen with a typical chancre or even an atypical one should be watched for skin manifestations, but if they do not appear, give him to understand, at least, that he cannot

be pronounced safe for some time. It is best not to begin treatment in any case until some decided symptoms of syphilis appear.

203 Granby Street.

NEW STANDARDS OF MEDICAL EDUCATION, AND SOME OF THEIR RESULTS.*

By R. H. WHITEHEAD, M. D., University Station, Charlottesville, Va.

Dean of Medical Department, and Professor of Anatomy, University of Virginia.

During the last fifteen or twenty years a movement has been going on in medical education which has produced such great changes that it is often described as a revolution. This revolution is still going on with results that seem likely soon to assume more or less definite shape.

Its leading features, as they present themselves to-day, may be summed up as follows: 1. Better preparation of students before admission to the medical schools. 2. Thorough training in the fundamental medical sciences by laboratory methods, the laboratory being regarded not so much as an end in itself, but rather as the means to a good understanding of the subjects studied, so that the student may have the power to keep abreast of the advances in after years. 3. Better training in the clinical branches of medicine by methods which permit and enforce a personal study of diseases and its management in living people, so that the practical efficiency of the graduates may be increased. 4. The employment of trained teachers to whom teaching and investigation are primary, not secondary, considerations. 5. Reform in the methods of State examining boards, so that their examinations for license shall be not so much memory tests as at present, but more practical in character, the applicant being required not merely to tell what he may remember, but also to show what he can do. We have not time to consider all these particulars; and I shall ask your attention merely to a brief account of what has been done in the matter of preparation required of medical students, and to some results which may reasonably be expected to follow from the introduction of these requirements.

As the result of the agitation of this subject, two standards of preliminary education have come to the front. The one has been adopted

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by a great many State boards, and by the Association of American Medical Colleges, and has also been endorsed as a temporary measure by the American Medical Association. It consists of a four-year high-school course, or an equivalent amount of education, and is regarded almost universally as the least amount of preliminary education that ought to be accepted. It owes its power, in the main, to the fact that it has been adopted by so many State examining boards, and is, therefore, the *legal* standard over a great area of the Union; so that schools which require a less amount of preliminary education are not recognized in such States, and their graduates are not admitted to the examinations for license. It follows, therefore, that any medical school which desires more than a mere local patronage must enforce, at least, this minimum standard. The Boards of the several States have recently gone further than this, and will require the completion of two years of work in a college of arts or sciences before admission to the medical school. This action, however, was taken in order to support their home schools. A little reflection will show that we scarcely have the right to look to the Boards for leadership in such matters. They represent the police power of their respective States, and exist solely to protect the public from incompetent practitioners of medicine. The problem they have to solve, in most cases, is not what constitutes the *best* education, preliminary or medical, but rather what constitutes *incompetency*; and their solutions of the problem oftentimes must and should be in the nature of compromises.

For leadership we must look to the schools themselves. Now, it has become somewhat fashionable of late to indulge in indiscriminate abuse of medical schools at large, which, it seems to me, is misleading and not justified by the facts. On the contrary the improvement in medical education as exemplified by our best schools exceeds that made in any other line of educational endeavor, and the instruction given in them is equal to any in the world. Upon the schools there rests the obligation of seeking for what is best, and of trying to put it into effect—the obligation, in short, of striving to approximate ideals.

And this brings me to the second standard proposed which, while its most active advocate

is the Council on Medical Education of the American Medical Association, had its birth in the schools. According to this standard, something more than the usual high-school education is necessary for the comprehension of such very difficult work as the modern medical curriculum has become, and the student should have the preparation, both in knowledge and in training, which is derived from good college courses in the sciences fundamental to medicine, *i. e.*, chemistry, biology and physics. This standard is already in force at a number of schools; and in 1910 practically every university medical school in the country will be requiring from one to four years of college work as a prerequisite to admission.

Now, a few words as to some of the results which may reasonably be expected to follow the wide adoption of these standards. It requires no prophet to see that they will lead to a great reduction in the number of medical students; indeed, the reduction is already going on. The number of students in the session of 1907-08 was about 3,000 less than that of 1905-06. Recently I have examined the statistics of twenty-one representative schools which have increased their entrance requirements within the past few years. In many cases the increase was only to a high-school course, and required no amount of college work. The average reduction in attendance at these twenty-one schools at the end of the first two or three years after the introduction of the requirement was forty-two per cent.; that is to say: these schools suffered a loss of nearly one-half of their students, as compared with the enrollment before the raise in standard. It would be interesting if we had time, to enter into some of the details of these statistics. For example, one school raised its entrance requirements to two years of college work. In the year preceding the introduction of this requirement the school had over 1,000 students—a number which, we may remark in passing, precluded the possibility of proper teaching; two years after the introduction of the requirement its enrollment had fallen to 450, a loss of fifty-six per cent. These figures show plainly that, in 1910, when the requirement of one or more years of college work will be in force at practically all the university medical schools, there will follow another enormous

reduction in the number of medical students. It is possible that the attendance upon schools having lower entrance requirements will be actually increased; but, undoubtedly, the sum total of the output of doctors in the country at large is going to be much less in quantity, but much better in quality—which, doubtless, is as it should be.

The second result to which I call your attention is not so comforting. The recent inspection of medical schools, conducted by the Council on Medical Education has revealed quite a number which, even under a very liberal system of grading, could not be regarded as doing acceptable work. The great majority of the States are protected against the graduates of such schools by the fact that their laws permit the examining boards to refuse recognition to them. On the other hand, there is a small number of States, and Virginia is one of them, whose boards are compelled by law to examine any man who graduates from a chartered medical school, which is the same thing as saying any graduate, since all medical schools are chartered. The graduates of these discredited schools, being excluded from the great majority of the States will gravitate naturally to the places of least resistance; and numbers of them will get by the boards, if only written tests are relied on to stop them. It follows, therefore, that there is in the present situation a distinct menace both to the profession and to the public of Virginia.

THE EXISTING RELATIONS BETWEEN THE GENERAL PRACTITIONER OF MEDICINE AND THE SPECIALIST.*

By J. WESLEY BOVEE, M. D., Washington, D. C.
Professor Gynecology, George Washington University;
Gynecological Surgeon to Columbia Hospital
for Women, etc.

I do not wish to offer any new thought or set of inflexible rules to govern the members of the great profession of medicine, or to dictate the plan to be followed in the conduct of those constituting any portion of it toward those of another portion. That organization and codes of ethics or required conduct are of great importance cannot be gainsaid. Consequently upon those points I will say but little.

The value of specialization in any and every

department of science, and particularly of medical science, has been so long appreciated by every student and observer of progress and development that its necessity for the best results has been generally conceded. If this statement be correct, then the general practitioner should always be ready to avail himself of such special knowledge in any case in which diagnosis or treatment, or both, is not well understood by him. I believe I will not invite contradiction when I state that the duty of the general practitioner is to secure counsel or assistance from the competent specialist whenever, in his judgment, he has not sufficient skill to bring to his patient the best treatment. Nor can anyone take exception to my saying the patient is entitled to the best professional skill if its attainment is practicable. The medical profession has always been too noble to look upon the commercial as the most important aspect in the treatment of the sick.

Perhaps clinical teaching has been a strong agent in stimulating this spirit in the practice of medicine, and has assisted materially in retaining for it its rating as the noblest of all professions. That the patients utilized for clinical teaching are of the dependent and indigent class, and that their conditions receive painstaking and skillful study as well as the best of treatment, are fortunate conditions, as they exert a powerful influence in promoting in the medical student a spirit of charity and, particularly, the idea that to even the lowly should be accorded the best that is in us.

My conception of this treatment is that it does not mean that the responsibility ends with the skill or ability of the individual physician, but that he, knowing the limitations of his sphere of activity should, if he believes greater skill can be procured, call such aid or counsel, provided it be practicable. I am confident this rule is commonly followed. And again in sparsely settled portions of the country, remote from medical centers and large cities, such assistance would be welcomed, but, for various reasons, is impracticable. In such places are found medical heroes: men who have been obliged to rely largely upon their personal ability. Many times their ingenuity, perhaps born of necessity, and devotion to duty are worthy of greater praise than we can bestow upon them. Fortunately, not all the patients of such a med-

*Read at the thirty-ninth annual meeting of the Society of Virginia at Richmond, Virginia, October 20-23, 1908.

ical hero fail to retain a lively appreciation of the valuable services thus rendered. But of the physician practicing in a general way, in the larger communities, such conditions do not obtain.

Skillful physicians in every branch of medicine are readily available. While such who practice in the thickly settled sections, have different environments, because more quickly impressed by new methods and the latest ideas in medicine, and can employ them with greater facility, it is still questionable whether they have as close association with Dame Nature, which, after all, is of the greatest importance in the practice of medicine. It is to be deprecated that most physicians are dependent upon their practice for means of a livelihood. Though having this sentiment, I would not recommend anything that would lessen the esteem of the world for the medical profession. I firmly believe remuneration for professional service is highly proper and essential for the maintenance of the high standing it has in the community. I particularly regret that medical charity to the deserving is not more widely practiced, though in this respect improvement is continually being made. One special advancement in this line is the effort in some communities to discriminate between the worthy and the unworthy applicant for medical charity. I can point with pride to the great work in this direction that was done by the Medical Association of the District of Columbia a few years since, and which is in vogue with the Board of Charities.

I do not think the practitioner of general medicine should have no knowledge of special branches in medicine, nor that he should abstain entirely from treating patients having such special diseases. Indeed, I have already referred to the necessity of such knowledge and practice among country physicians. But they should have considerable training in each of the special branches now recognized in the profession. I also think they will not commonly meet instances in which it will be impossible or impracticable to have the assistance of the specialist in diagnosis or treatment. The city physician can often apply proper treatment in the milder cases of diseases coming in the category of some of the special branches of medicine, but I would caution him against being

incautious. I am not willing, from my personal experience, to concede that the physician in general practice is as competent to diagnose or outline the plan of treatment of such special diseases. The field of medicine is too large for such accomplishment. Not infrequently, however, is he able to follow out successfully the treatment after the diagnosis has been made for him and the treatment planned by the specialist.

After an era of *cacoethes chirurgici* the profession finds itself in danger of considering some special branches as having the alternate name of a branch of surgery, as a certain class of surgical operations. The finer points of hygienic treatment are in danger of being forgotten. This is to be deprecated. The proctologist would not consider an operation necessary in every case of hemorrhoids, nor the gynecologist in every case of dysmenorrhea or uterine displacement. In such non-operative cases the specialist, after carefully studying the case, making a diagnosis and outlining the treatment, can and does refer the patient back to the attending physician for application of the treatment.

Two special evils that have resulted from this attempt at specialization by the general practitioner I will mention here. They are: first, delay in malignant disease until the condition is converted from a curable to an incurable one, and second, the growing custom of every physician to be his own surgeon, even in major surgery. It would be unfounded presumption to conclude that were malignant diseases never treated by the general physician they would not reach an incurable stage. Many women, and men as well, suffering from malignant diseases do not seek medical advice until the disease is far advanced. And, again, in many cases malignancy is not detected,—perhaps not suspected, until revealed by operation, microscopical examination or recurrence after operation upon growths considered benign in nature. I do know, however, that in my specialty the cases of cancer of the uterus that come to me in an incurable state, and that have been in the care of physicians for months and years are not few. In some of these, examinations have not been made. In others the diagnosis has been “change of life,” and in others the patients have been subjected to palliative

treatment at early stages when perhaps surgical cure was possible.

The effort of the general practitioner to be a surgeon is an obstruction to the progress of medical science. It is a reversal of the onward tendency. I promptly admit that the newly qualified physician has a certain amount of training in surgery. The sense of sight enters into this training, however, much more than the sense of touch. Many of the beginners in practice have few enough patients, but of these perhaps ninety per cent. are non-surgical. But there is a feeling that fame will follow a few surgical operations, and the itch for surgery, overwhelm the interest in the medical cases. This tends to create the class that might be known as multiple specialists. A few scattering operations are performed by them during the first few years of practice. But I submit, surgical operations must be performed frequently if they would be well done.

I will now refer to two evils of common occurrence among specialists. They are, first, reference by specialists of patients to physicians, sometimes other specialists, other than those who originally referred the patients to them; and, second, non-special treatment by specialists, of referred patients. I am occasionally informed by physicians that they referred patients to Dr. A—, a neurologist, for diagnosis and an opinion as to treatment. Dr. A—, after examination, refers the patients to Dr. B—, an ophthalmologist, or Dr. C—, a gynecologist, or Dr. D—, an internist for treatment of gastric or cardiac trouble. The result to the first physician is that he never again sees his patients. Surely the first specialist, Dr. A—, should only have examined the patient and advised the family physician to have an ophthalmologist, gynecologist, etc., examine the patient, thus allowing the first physician to select. In the second evil the specialist should clearly see his duty is to refer the patient for non-special treatment to the physician who referred him for special treatment. The specialist who so treats a referred patient must expect the righteous displeasure of the physician referring, for such conduct is unfair. It is not pleasant for the family physician to think that in the specialist he has a competitor for his family practice. He would justly view with alarm the disguise of the specialist.

After commenting upon the advantages of a close and equable relation between specialists and others in our profession, and the faults of both sides that render this relation less fraternal than it should be, I leave the subject for your consideration. This I will do, however, only after making an appeal for a closer relation between the practitioners of the different fields of medicine, that they will study methods calculated to produce just and equable results to all concerned. I have not, from personal grievances, prepared this paper. It has been prompted solely by a desire to have rectified some of these evils as they seemed to me, and I have thought their discussion in the abstract, rather than in specific instances, the best plan.

The Rochambeau.

Editorial.

Consolidation of Medical Colleges.

In this country, with a total population not exceeding 90,000,000, there are over 160 medical graduating institutions, claiming reputability. This is an average of nearly four medical colleges for each State. There are probably as many as 25,000 medical matriculants in all of these graduating medical colleges, and possibly an annual total of some 7,000 graduates in medicine. Examination of the catalogues of these institutions shows that there are nearly 8,000 professors, adjunct professors, clinical and laboratory assistants, instructors, and "quiz-masters," in addition to large corps of dispensary and hospital physicians and surgeons. In short, there is at present an average of more than one teacher for each graduate in medicine.

As to the monetary income of these institutions—not referring to the relatively few that are well endowed, etc.—we believe it to be a liberal average to say that about \$125 a year, per student, will cover all tuition expenses; or, for the total estimate of 25,000 annual students, the whole income from this resource for all of the over 160 colleges would be about \$3,130,000.

As to the expenses of the unendowed institutions, it may be noted in general that the

professors in practical chairs, their adjuncts and assistants, etc., receive little or no compensation for their services of fully six months a year. But the professors, adjuncts, teachers, demonstrators, etc., in the non-practical chairs—such as Anatomy, Pathology, Bacteriology, Chemistry, etc.—may each receive a relatively small annual compensation; and the Proctors and Registrars, the clerks, the janitors, etc. are also to be paid. Beside these expenses, equipments have to be continuously provided, repairs made, advertisements kept up, the clinical wards of attached hospitals and dispensaries supported. In short, with all practical economy, the average running expenses of a reputable medical college cannot be less than \$20,000 annually—exclusive of the original cost of grounds and buildings, insurance, and a number of other items. This, we have, at a very conservative estimate, a total annual expense of fully \$3,250,000 for the running of the over 160 medical colleges in this country.

Even if the general hospitals usually connected with these colleges were financially profitable, or even well self-supporting, something might be saved for the colleges; but more often than otherwise these hospitals come in for an added expense upon the already financially oppressed colleges. It is thus seen that, in many instances, many of these institutions are a monetary drain upon the pocketbooks of those professors and teachers who look for profit from their increased reputation and consequent patronage.

The multiplicity of medical colleges in this country began, in great part, some fifteen or more years ago, when higher requirements for medical education seemed demanded. Until then, an average term of two sessions of about four months each in different years was the requirement for graduation. Then three sessions of at least six months each was established as a minimum. But now that most of the reputable colleges have agreed to the higher standard proposed—such as the better degree of preparedness of the matriculating student, the lengthening of the period of medical courses to four years of over six months' session each; and with a tendency now prevailing to require five annual sessions after 1910—the time appears to have arrived when many consolidations of existing medical graduating institutions may

—or even should be made, with mutual advantages. It is plain that, with the increasing requirements upon the student for entrance into medical colleges, combined with the lengthened period of tuition in such colleges soon to be demanded, there will be a marked decrease in the number of medical matriculants; and many colleges now struggling financially for existence, will have to "go out of business," and leave the whole field to the relatively few well endowed institutions.

Other reputable colleges, when they come in 1910 to meet all of the higher requirements itself on having an annual matriculation list of about a thousand. It then took the advanced step of requiring, beside the at least two years of academic education, the four full sessions of medical studies. At once, the total number of annual matriculates dropped down to about 400; but this institution is sufficiently endowed to stand the financial losses thereby incurred.

Other reputable colleges, when they come, in 1910, to meet all of the higher requirements for matriculation, lengthened sessions, etc., will likewise suffer financially from relative losses of students. It is to meet the inevitably coming issue in the matter referred to that we suggest the timely consideration, by a number of the good medical colleges of the country, of proper consolidations or amalgamation of forces, and thus, in great part, preserve their integrity.

Each of the three medical graduating colleges of Virginia has established a creditable standard for graduation, as shown by the fact that those who hold diplomas from any of them are becoming the lights of the profession in the several communities in which they locate. And if further proof were required, let one familiar with the membership of State medical societies even fifteen years ago, compare them with the membership of the same societies of the present day, and he is compelled to recognize a wonderful growth in the information of the rank and file of doctors of this age. It is not, therefore, that the reputable medical colleges of to-day are not prepared to teach; but the constant financial strain in keeping these institutions equipped, and up to a proper high standard, will, in a short while, wear out the ability of those in charge to supply the monetary drain.

It does not seem to be altogether Utopian to believe that the day is not far distant when, by mutual agreements between existing institutions of this State, there may be one great University of Medicine established at Richmond, which, by State help, city appropriations, endowments, etc., will be altogether self-sustaining. Richmond already presents every facility needed for clinical material, and the equipments already provided in each of the three institutions of Virginia can easily be transferred to the suggested University of Medicine. The medical institutions of the State, as they now stand, can furnish the ablest of professors and teachers in didactic, clinical and laboratory work, and there will be wide open fields for original pathological and bacteriological research.

If we look at successes in other walks of life, we find that large corporations, with ample capital and facilities, are demanded of the times. The day is at hand for concentrations of energy, efforts and influences to make medical colleges what they wish to be.

We are not undertaking in this note to suggest any definite plan for the organization of such a Medical University. We wish only to call attention to the pointings of the inevitable in a few years to come, and to prepare the professional mind as to the more than probable outcome. Singly, many of the now good medical colleges cannot long stand the financial drain upon those in charge of them. United, they will not fail of support, and would grow more and more into true usefulness to the profession and to humanity.

The Virginia State Board of Medical Examiners.

The forty-sixth semi-annual session of the Virginia State Board of Medical Examiners has just closed at Lynchburg—making twenty-three years of existence of the law regulating the practice of medicine and surgery in the State. In the usual course of papers, report of that session will appear in our pages.

The improvement in medical education in the twenty-three years is most marked. Medical teaching has not only kept pace with the advance in medical knowledge, but better and more thorough methods obtain. Twenty years ago, one or two years at most was the usual time

given to obtaining the M. D. degree. Now, a high school education as a preliminary and four years, of from seven to nine months, in a medical college is the rule. In addition to this, after graduation, a doctor must obtain and register the certificate of a State medical examining board before obtaining license.

This is the outcome of more knowledge, greater attainments and a larger and more exacting demand on the part of the public.

The law regulating the practice of medicine and surgery has served a double purpose. It has made the student start with a better preliminary education because the majority of medical colleges have adopted a more extended curriculum and are doing better teaching, and the members of the examining boards are compelled to keep abreast the advancement of the profession in all its branches.

The examiners themselves are becoming better educated; their work is educational, and here, in Virginia, examiners are required to give the Board in session an abstract of the answers they expect to the questions propounded.

The Virginia Board has done good work, as attested by its standing with other boards. Nearly 2,500 certificates have been issued and reciprocity is had with a number of other Boards. The Board is authorized by law to recognize the certificate of any State Board, whether there is mutual reciprocity or not, but there must be discrimination as well as uniformity of conduct, else confusion will follow.

What the Virginia Board needs is the power to decide as to reputable colleges; then the inferior schools can be cut out and applicants unprepared because of poor teaching will cease to trouble. The work is hard and the responsibility great, but it is especially so when examining the papers of a badly prepared man.

The question of not doing injustice to an applicant who has not sufficient knowledge of rudimentary English to make his meaning clear, is one that perplexes the examiner at every session of the Board.

Some changes are needed in the law in order that the examining board may do its work with less annoyances, and that applicants may understand that the board nor any officer has authority to act otherwise than as the law directs.

At least a four years' high school education should be required before entering upon the

study of medicine or an examination by a committee of the school, to test the preparation of the applicant before admission.

Each board should be represented at the annual meetings of the Council on Medical Education of the American Medical Association and the expenses should be paid by the State. It is through this Council that uniformity in examination and laws must be obtained.

In order that the State Medical Examining Board may reach its highest point of usefulness it must be sustained by the entire profession throughout the State and fostered by the Society as it has been for twenty-three years.

Abdominal Supporters After Operations.

Surgeons generally advocate the wearing, for indefinite periods of time, of some form of abdominal binder or supporter after operations for appendicitis, and other intra-abdominal troubles. An extemporized binder sometimes serves the purpose of so maintaining the stitched incisions as to lead to satisfactory recoveries; but more frequent is it that the scar of incision leads to prolonged general discomfort, becomes relaxed, and sometimes permits of a hernial sac, or weakened abdominal walls. Of all the devices brought to our attention for the healing of the wounds, for supporting the parts and yielding comfort to the patient, nothing yet invented appears to be the equal in efficiency to the binder and abdominal supporter made by Dr. Katharine L. Storm, of Philadelphia, and advertised in this journal. The patient can easily adjust one for herself or himself after leaving the hospital. It is commonly prescribed and commended by leading practitioners of Philadelphia, Pittsburg, Washington, D. C.—indeed, in many Northern and Western medical centers; but does not seem yet to be well enough known to Southern doctors. It is to call their special attention to it that we write this note. Pamphlets of instructions as to how to make measurements for proper fits, etc., will be sent on application to Dr. Storm.

It is seldom that we call editorial attention to any one of our advertisements, for the reason that each page devoted to them should be as carefully examined as our reading papers. But the invention above referred to appears to possess so many advantages that we feel we are

doing a general service in calling special attention to it.

The Tri-State Medical Association of the Carolinas and Virginia.

Will hold its next meeting in Charleston, S. C., February 16-17, 1909. Members are urged to attend and to get friends to join. Those expecting to read papers are requested to send titles to the Secretary, Dr. J. Howell Way, Waynesville, N. C. Dr. Albert Anderson, of Raleigh, is President of the Association.

Obituary Record.

Dr. James William Tankard,

Of Lilian, Va., died December 30, 1908, in Baltimore, Md., whither he had gone for operation for abscess of the liver. Dr. Tankard was born June 9, 1846, in Northampton county, Va. He obtained his academic education at private schools, and graduated in medicine from Washington University, which was afterwards merged into the College of Physicians and Surgeons, Baltimore.

He joined the Medical Society of Virginia 1888, and attended a number of its meetings. He was also a member of the Medical Examining Board of Virginia for several years.

Dr. Tankard was well known throughout the Northern Neck of Virginia, where his loss will be greatly felt. He is survived by his wife, four brothers and one sister.

Dr. Robert William Nelson

Was born in Albemarle county, Va., 1822, and died at his home in Charlottesville, Va., December 22, 1908, aged eighty-six years. He graduated in medicine from Jefferson Medical College, 1846. After practicing for several years in Powhatan and Goochland counties, Va., he moved to Charlottesville, 1868, where he continued in active practice till about ten years ago. He was a member of the *antebellum* Medical Society of Virginia, and 1872 joined the present organization, in which he ever took an active interest, being a vice-president in 1875. For many years he was health officer of Charlottesville.

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Original Communications.

CESAREAN SECTION.*

— LEWIS C. MORRIS, M. D., Birmingham, Ala.,
Professor Gynecology and Abdominal Surgery, Birmingham Medical College; etc.

My especial interest in this subject began in 1901, when I executed the second Cesarean section ever performed in the State of Alabama, whereby the lives of both mother and child were conserved. I became convinced at this time that this procedure possessed superior advantages over many of the obstetric operations which were in general use, and that its field of usefulness was far broader than was generally considered by the profession. My subsequent experience in these cases and in abdominal surgery generally has convinced me of the correctness of these views.

When it is taken into consideration that by actual measurement about 10 per cent. of all white women in America will be found to have contracted pelvises, and that 2 per cent. are contracted to such an extent as to mechanically obstruct the delivery of the child, and to demand some operative interference, and that on the selection and election of the operative procedure, and the promptness with which it is done, frequently depends the life of the mother and more frequently the child, we can but be impressed with the importance of this subject, especially to the general practitioner, who throughout our Southern country is most frequently the obstetrician as well.

There are three types of the Cesarean section.

1st. The Sanger operation, which contemplates simply the removal of the child through an incision in the abdominal wall.

2d. The Porro operation or laparo-hysterec-

tomy, in which the whole or part of the uterus is removed after delivery of the fœtus.

3d. The vaginal Cesarean section of Dührssen, in which the child is delivered by incision of the uterus made through the vagina.

The Sanger operation has been modified considerably by different operators, notably by Fritschs' method of making a transverse incision through the fundus, and by Franks' effort to dissect up the peritoneum from the posterior wall of the bladder, and to deliver the child by an extra peritoneal operation. My observation has been that the first innovation offers little advantage over the typical operation, and the Frank procedure is impossible in the majority of instances.

The indications for Cesarean section may be divided into first, *absolute*, and second, *relative*.

1st. The operation is absolutely indicated with a live child in a flattened pelvis with a true conjugate of 6.5 centimetres or less, or in a uniformly contracted pelvis of 7.5 centimetres or less, or with a dead child in a pelvis measuring 5.5 centimetres or less, or when the mother is moribund, or has just died. It is absolutely indicated in certain cases of atresia of the vagina and cervix, due to the presence of cicatricial bands, or when there is a myoma in the lower uterine segment of sufficient size to block the pelvic outlet; or when there are tumors of the pelvic bones, malignant or benign, which prevent delivery per vias naturales. Of this class of cases, where the indications for operations are absolute, I shall have little to say, except to urge the importance of early diagnosis in order that we may give our patients the benefit of early operation and prevent anti-operative exhaustion and consequent lowered resistance, which are such potent factors in the mortality of this operation. This can always be accomplished by careful and thorough examination in the latter weeks of pregnancy, by

*Paper read by invitation before the Medical Society of Virginia at its thirty-ninth annual meeting, held at Richmond, October 20-23, 1908.

external palpation, digitally, and with the pelvimeter, of every primipara and of every multipara, the history of whose previous confinements leads to the suspicion of mechanical obstruction. The presence of practically all of these conditions which constitute the absolute indications for Cesarean section can be positively determined before the onset of labor, if we will only give our patients the benefit of thorough examination, including careful mensuration.

2. The indication for Cesarean section is relative when the child is alive in a pelvis whose true conjugate measures as much as 8.5 centimetres, or in a general contracted pelvis, with a conjugata vera of 9 centimetres. The course of labor in cases of this class will depend upon the size and mobility of the foetal head and upon the force of the uterine contractions. The same contraction of the pelvis which in one case would positively demand surgical interference might not prevent spontaneous delivery in another. An excellent rule laid down by Williams, in the border line cases of this class, is that, after an hour of strong second stage pains, the signs of engagement are absent, Cesarean section should be seriously considered; so that uterine inertia unassociated with pelvic contraction under certain conditions constitutes a relative indication. Other relative indications for Cesarean section are the presence of obstructive myomatous tumors in the lower uterine segment, which are susceptible of removal through the vagina; prolapsed ovarian or other tumors, which cannot be replaced under anæsthesia; the existence of carcinoma of the cervix, which has resulted in the formation of dense rigid tissue, rendering dilation of the cervix impossible; in rare instances the existence of malignant growths of the rectum, which obstruct the pelvic canal; in rare cases of eclampsia in primiparous women, in which the cervical canal is resistant and almost cartilaginous inconsistency, rendering dilatation impossible; in cases of complete placenta prævia, which have passed the seventh month, and are not in collapse from hemorrhage; and in uncontrollable hemorrhage from the site of placenta attended with uterine inertia.

In the selection of a procedure in this class, we should be influenced, first and foremost, by what will conserve the best interest of the

mother. At the same time, when two methods offer equal or nearly equal chances for the mother, and the one has a small, while the other has a large infantile mortality, the interest of the infant should receive due consideration. In occasional cases a slightly increased risk to the mother will be more than compensated for by the rescue of the offspring.

The obstetrical procedures with which Cesarean section come in competition in flattened or contracted pelves are, first, symphyseotomy, or division of the pubic joint. This operation is only applicable with a true conjugate of 6.5 to 8.5 centimetres, and it is a much more serious operation than the text-book descriptions would lead us to believe. The hemorrhage attending it is frequently annoying, and the danger of injury to the bladder and other soft tissues is not inconsiderable. It is not devoid of the dangers of infection, and is not infrequently followed by impairment of locomotion from permanent mobility of the pubic bones. Not infrequently errors in the estimation of the size of the head or pelvis have resulted in the inability to deliver after the performance of a symphyseotomy and a supplementary Cesarean section or craniotomy would become necessary. In favorable cases those which are not exhausted by prolonged labor, and which are uninfected, the statistics show better maternal mortality from the Sanger Cesarean section than from symphyseotomy, and, of course, in the former the infantile mortality is infinitely better, for there is no obstetric procedure in which the infantile mortality is so small as in Cesarean section.

2d. The next competing obstetrical operation is pubiotomy. Personally I have had no experience with this operation, but the recent statistics of Williams and others would indicate that in the border line cases this is a better procedure than symphyseotomy, and should be adopted in preference to it. The indications for and objections to it are about the same as given for symphyseotomy.

3d. The induction of premature labor may be elected when the foetus is viable between the twenty-eighth and thirty-sixth week, in pelves measuring 6.5 to 8 centimetres. The maternal mortality resulting from this procedure has within the past few years, since the general introduction of modern surgical tech-

nique, been very much reduced, but the enormous fetal mortality of 50 per cent. should be a strong argument against it, when it is taken into consideration that such cases would at term come under the favorable class for Cesarean section, in which both the maternal and infantile mortality is almost nil.

4th. Craniotomy should only be done when the child is dead, and the conjugate is 5.5 centimetres or more. This procedure should never be resorted to if the child is alive, but pubiotomy, the Sanger or Porro Cesarean sections, selected according to the indications.

The presence of a myoma in the lower uterine segment, which obstructs the pelvic canal, should be a positive indication for Cesarean section, unless the growth be pedunculated, when it might be removed and labor terminated normally. Prolapsed ovarian tumors which block the pelvis and cannot be replaced under anæsthesia demand Cesarean section.

In carcinoma which has rendered the cervix incapable of dilatation the Porro Cesarean section should be the operation of election. This is indicated both in the interests of the mother and the child.

In rare cases of eclampsia in primiparæ, in which the cervix is resistant and undilatable, the vaginal Cesarean section is the operation of election. This operation consists in separating up the bladder in front and the peritoneum behind and incising the cervix anteriorly and posteriorly.

In cases of placenta prævia which have progressed as far as the seventh month Cesarean section offers as good or better maternal and a much better infantile mortality than any other procedure, provided the patient is not in collapse from hemorrhage.

In cases of hemorrhage from the site of placenta associated with uterine inertia, which is not controlled after delivery of the child by hot irrigation and packing the uterine cavity, the Porro operation is indicated.

The maternal mortality in the conservative Sanger operation varies from nil to 6 per cent., depending upon whether it be elective or done as a dernier resort after the woman is exhausted or infected. In the Porro operation the maternal mortality is higher, and varies from 5 to 15 per cent., depending upon the same conditions. This does not take into account the

remote results in operations necessitated by malignancies.

In the vaginal operation, whose chief indication is a resistant and undilatable cervix in rare cases of eclampsia occurring in primipara, the maternal and infantile mortality is smaller than in any other method of treatment.

From the foregoing it is seen that the maternal mortality from Cesarean section depends largely upon whether the operation is a predetermined *elective* one, or whether it be complicated by exhaustion and infection. It is my opinion that the predetermined elective operation should have little if any greater mortality than a clean interval appendix operation. I also believe that in the infected or probably infected cases which are associated with more or less exhaustion, the drainage of the uterine cavity through the abdominal incision, will give better results than the Porro operation. The infection in these cases is primarily within the uterine cavity, and with the exercise of ordinary precaution, there should be little danger of infecting the general peritoneal cavity at the time of operation. The infection is a true septic progressive one, and produces, first, a metritis or a puerperal septicæmia, and then a secondary involvement of the peritoneum, and not infrequently death will occur with little if any peritonitis. In the presence of infection, the typical Sanger operation increases the risk from septicæmia by reason of the fact that the stagnating blood in the uterine incision and in the uterine cavity furnishes an ideal culture medium for the growth of the bacteria. For this reason I wish to advocate, in infected cases, complicated by exhaustion, the drainage of the uterine cavity in preference to the removal of the uterus, for the reason that it subjects the woman to a smaller dose of surgery and will almost invariably, I believe, take care of infection.

I have adopted in my cases the following technique: A median incision through the abdominal wall, about twenty centimetres in length, one-third being above and two-thirds below the umbilicus. The uterus is then delivered through this incision and the peritoneal cavity is thoroughly protected and packed off with towels wrung out of sterile salt solution. The uterine arteries are then grasped at the cervix by an assistant, and a longitudinal incision in

the anterior surface of the uterus of about twelve centimetres in length is made. It is my observation that it is very difficult to determine the location of the placenta, but an incision made over it in no wise complicates the operation, as the compression of the uterine arteries absolutely controls hemorrhage. The child is then delivered, the placenta separated and removed along with the membranes. The cord is clamped and cut, and the child is turned over to an assistant to resuscitate. The uterine wound is then closed by a continuous chromicised catgut suture, which is inserted just underneath the peritoneum and comes out just superficial to the endometrium. This suture extends from one end of the incision to the other, and is so introduced as to thoroughly approximate the margins and to leave no dead spaces. Interrupted Lembert sutures are then introduced to approximate the peritoneum. The abdominal incision is then closed in layers.

In infected cases the incision is closed as described, except three centimetres at the lower angle, and the drainage is established by introducing a continuous through and through catgut suture into the uterine wall, for the purpose of exerting pressure and controlling the hemorrhage, and then suturing the parietal peritoneum to the uterine peritoneum near the margin of the incision. The abdominal incision is then closed by through and through silkworm sutures, except that portion of it over the opening in the uterus. A Mikulitz wick is introduced through the abdominal wall into the uterine cavity.

I beg to report the following cases:

C. W., age 19; primipara. Seen January 14, 1901, in consultation. Had been in active labor for twenty-four hours, general condition good, pulse 110. She was having intense and almost constant pain. On examination the vagina was found to be completely occluded by a hard, dense, inelastic, connective tissue wall. The history brought out the fact that shortly after conception had occurred a physician had been employed to induce a criminal abortion, and that for a period of two months or more he had made systematic applications to the cervix and vagina of cauterants, which the patient said had caused great pain and kept her in bed most of the time. The upper part of the vagina had evidently been completely denuded

by the applications which resulted in a complete atresia. Patient was sent into a hospital and operation begun twenty-eight hours after the onset of labor and executed as described above. The child and placenta were rapidly delivered and the former was resuscitated without difficulty. The cervix was explored from above and was found undilated, rather hard and apparently occluded. With an assistant pressing his finger from below against the thinnest point in the fibrous septum, which was about its center, and with my finger in the internal os, I made an incision from above through the cervix and fibrous septum, having the bistoury withdrawn through the vagina. A two and one-half inch eight-layer gauze drain was then passed from above through the cervix and vaginal cicatricial tissue, leaving one end in the uterine cavity. The operation was then completed as described above and consumed fifty minutes. The woman did not lose as much blood as is ordinarily lost in normal confinement. The gauze drain was changed daily for several days and the patient made an uncomplicated recovery, except that there was a slight infection at the upper angle of the skin incision. The baby nursed until he was eighteen months old, and in his growth and development differed in no wise from the infants who enter the world in the natural way.

Case 2. Mrs. McK., primipara, age 26. Examined on the night of April 24, 1905. Gave history of having reached full term. For several days previously had had periodical pains at intervals with long remissions, during which time she was comparatively comfortable. On digital examination the vault of the vagina was found almost entirely filled by a myomotus tumor as large as a closed fist, which was in the lower uterine segment. The cervix was dilated just enough to introduce one finger. The tumor was so large that it absolutely precluded the possibility of spontaneous delivery, and its location was such that I deemed it inexpedient to attempt its removal through the vagina. On account of the slight cervical dilatation and the fact that the patient was at this time perfectly comfortable, it was decided to defer operation until pains should start again. The fetal heart sounds at this time could be heard. The patient slept well that night and the pains started again about 10:30 on the following morning. Simultaneously

with the commencement of pain there was rather a profuse discharge of meconium. On examination at this time the foetal heart could not be heard. The operation was performed as described above and the child was found to be dead. The operation was completed as in case No. 1. Recovery from the anæsthetic was prompt, and the patient progressed nicely for the first three days, the bowels moving satisfactorily and the abdomen being soft, undistended and not sensitive. On the third day she had a rigor and temperature jumped to 103, pulse 120. Form this time on she ran a typical course of puerperal septicæmia without any evidence of peritoneal involvement and died on the eleventh day after operation. In this case there was an intra-uterine infection prior to operation; which would probably have terminated differently had I done a hysterectomy, or had I drained the uterus through the abdominal wall as described above.

Case 3. Mrs. B. F., age 23, primipara. This patient was seen about December 1, 1905, in consultation and was eight months pregnant. Her history and condition indicated rickets in childhood, as there were exostoses of considerable size on several of the long bones. She had a flattened pelvis with a true conjugate of about ten centimetres. There was a bony tumor at the sacro-iliac synchondrosis on the right side, which I thought would prevent delivery. I advised waiting until labor started, and if after an hour or more of active second-stage pains there was no engagement of the head then do a Cesarean section. Labor began at 1:30 A. M. on the 27th of December and patient was sent into the Hillman Hospital. Dilatation was complete and expulsive pains started about noon. At 2:30 P. M., after frequent and strong bearing down pains, there was no engagement, and immediate operation was advised. The operation was begun at 3:30 and executed as described, consuming about forty minutes. The resuscitation of the infant was accomplished without difficulty, and the subsequent course of both mother and child were absolutely uneventful. The milk started on the third day, the subcutaneous abdominal stitch was removed on the ninth day, she was out of bed on the tenth day, and drove home on the fourteenth day after operation.

Case No. 4. Mrs. A. B., age 19, primipara.

Admitted to St. Vincents' Hospital May 19, 1907, at 10 A. M. Patient had been in labor forty-eight hours, and during the course of the night before admission efforts had been made by two obstetricians to deliver with forceps, under conditions unfavorable to asepsis. When examined the patient was badly exhausted, with pulse of 130 and temperature of 101.5. On digital examination, the head was presenting at the superior straight and unengaged. There was a flattened pelvis, with an antero-posterior diameter of nine centimetres. In view of the fact that delivery with instruments had been unsuccessfully attempted by two accomplished obstetricians, I decided to do a Cesarean section. Under ether the operation was executed as in previous cases. The child was delivered and resuscitated with some little difficulty. There were several contusions on the head, resulting from the efforts at instrumental delivery, but, except for this, the baby appeared to be all right. The abdominal and uterine incisions were closed and a gauze wick was left in the uterine cavity projecting through the cervix, for the purpose of promoting uterine drainage and stimulating uterine contraction. This patient ran a temperature varying from 101 to 103 for six days, when it became evident that there was an accumulation of fluid about the center of the abdominal incision. The incision was opened at this point and two or three ounces of pus escaped. On irrigating this cavity it was found that the water escaped through the vagina. After this the temperature dropped to about normal and the convalescence was interrupted patient leaving the hospital entirely well five weeks after operation. This was a case from whose history I had every right to infer had been infected, and in which, if I had drained the uterus through the abdominal incision at the time of operation, convalescence would have been quicker, and the fortunate outcome which nature accomplished would have been assured.

Case No. 5. In this case I was associated with my friend and colleague, Dr. Jordan, of Birmingham, through whose courtesy I am permitted to report it. Mrs. S. S., age 23, primipara, seen in consultation with Dr. Jordan at 11:30 A. M., August 10, 1908. Had been in labor thirty-six hours and was beginning to show evidence of exhaustion. Pulse

was 120, had had hard pains for twelve or fifteen hours, but for the last three or four hours before I saw her pains were less frequent and weaker. Waters had ruptured early in the course of labor. On digital examination cervix was fully dilated and the head was presenting at the superior straight, unengaged. Patient was sent into the hospital and under ether anæsthesia an unsuccessful effort was made to deliver with instruments. An attempt to do version was also unsuccessful; so Cesarean section was decided upon and executed as previously described. A child weighing twelve pounds was resuscitated without difficulty. At the request of the husband this patient was sterilized by tying the outer extremities of both tubes in two places and cutting between the ties. The convalescence of this case was afebrile. The milk came on the third day, patient was out of bed on the tenth day, and returned home on the fourteenth day.

CONCLUSIONS.

An important factor in this operation is to minimize the loss of blood and this is best accomplished by having the uterine arteries grasped by an assistant or compressed by encircling the cervix with a soft rubber catheter before the uterine incision is made. If this is done there is no blood lost except what is already in the uterine sinuses, and it does not interfere in the least with the progress of the operation, or the post-partum uterine contraction.

In predetermined elective Cesarean section it is never necessary to remove the uterus, except in the presence of uncontrollable hemorrhage from the site of the placenta, which I have never seen, or where there is carcinoma of the cervix or myomatous tumors which cannot be enucleated.

In the presence of exhaustion and infection or probable infection the uterus should either be removed or treated as we do our infected gall bladders, by drainage through the abdominal wall.

If the prevention of future conceptions is desired it should be done by tying off the tubes at their outer ends, as hydrosalpinx has been reported following cases tied near the uterus. This can be done without loss of time and involves a minimum amount of surgery.

In cases in which a diagnosis of the positive

indications for Cesarean section has been made before the onset of labor, I am convinced that it is safest and best to carefully compute the termination of gestation and, when this time arrives, to operate regardless of the onset of labor. I am also convinced that a diagnosis of the conditions which would necessitate Cesarean section can most frequently be made before the onset of labor. If this is done then the operation becomes one of *election* and, in the hands of an experienced operator and done under the proper conditions, the maternal and infantile mortality should be almost nothing, or no greater than in clean interval appendectomies.

830 South Twentieth St.

GASTROENTEROSTOMY FOR ULCER OF THE STOMACH OR ITS SEQUELAE—REPORT OF ELEVEN CASES.*

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formerly Assistant Surgeon General, U. S. Public Health and Marine Hospital Service, etc.

Gastroenterostomy means the making of a communication between the stomach and any part of the intestines, but to make the meaning clearer, the name of the part of the intestine used is often given—thus we have gastroduodenostomy, gastro-jejunosotomy and possibly gastro-ileostomy.

The operation was first performed successfully by Wolfer in 1881, and during the first four or five years it was practiced the mortality was as great as the present mortality for suturing wounds of the heart, namely about 66.3 per cent. Of the various operations performed the one most practiced is the Von Hacker with Peterson's modification—that is a union between the posterior surface of the stomach and the first parts of the jejunum without a loop. It makes no difference whether the course of the jejunum, its peristaltic wave, corresponds with that of the stomach or not—the main point is to use it so that there will be no loop and at the same time not have any tension on the parts, and avoid any kinking. For this reason it seems to me best not to turn the jejunum around so that its downward curve shall point to the patient's right instead of to the left as it does naturally, but to bring it straight up

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without turn into approximation with the stomach. Two things prevent this; first, the location of the pylorus too far to the right, and second the location of Treitz's ligament too far to the left. Treitz's ligament may be partially divided as suggested by Mayo, taking care of the inferior mesenteric vein and left colic artery. If it fail, the jejunum *must* be turned forward and toward the patient's right, making a short loop, the wave then corresponding with that of the stomach. I prefer to do the operation without the use of clamps as I think traumatism is less and complications less likely to follow. The union should be made by sutures—silk preferably—and the opening should be two and one half to three inches in length and a few sutures should unite the two viscera for a short distance—say half an inch or more beyond each end in order to prevent acute flexion of the jejunum and possibly obstruction and the "vicious circle." The inside suture should penetrate all the coats of the viscus and the outside one should omit the mucous coat only.

Gastroduodenostomy was first done by Jaboulay but it is not much used at this time in its original form as it is often impossible to get room for a large enough opening; but in the form of pyloroplasty, the Heinecke-Mikulicz operation, and the Finney operation from which it differs very slightly, it is used considerably and will probably be used more and more in the future. In gastroduodenostomy as done by Jaboulay and Kocher a communication is made between the stomach and duodenum by means of two separate openings—one in each viscus, the margins of which are sewed around to each other.

In pyloroplasty only one incision is made—a long one which slits the pylorus, incidentally dividing any stricture which may exist, and passing into the stomach and duodenum. Then the margins are united to each other all around as in the former case. In the one operation the pylorus is excluded, and in the other it is included in the new opening or the enlarged opening made. This operation was first done by Heinecke as a straight incision through the stricture, then bringing the margins together at right angles, was modified in 1887 by Mikulicz by extending the incision downward on each side into the stomach and duodenum respectively, horseshoe shaped, and is now called

the Heinecke-Mikulicz operation. In 1902 Finney modified it slightly by increasing the size of the opening and suggesting a different method of suturing.

Pyloroplasty or gastroduodenostomy would seem to be the best of all these operations because it leaves the viscera in a more nearly natural relation than does any of the others. Food still passes through the duodenum and comes in contact with the bile and pancreatic juice in a normal way. There is no danger of a vicious circle forming, or of intestinal obstruction following, on account of misplaced viscera or abnormal openings. Peptic ulcer has never been known to follow it although it does follow gastrojejunostomy in about two per cent. of cases (Mayo-Robson). It is the ideal operation in pyloric stenosis from ulcers which have healed and in which the dilatation of the stomach is not excessive.

It is not as good an operation as gastrojejunostomy in

1. Fresh or bleeding ulcer, in or near the pylorus.

2. In enormous dilatation with atony of the stomach, when the opening will not be at the most dependent part.

In suitable cases the difficulty of performing the operation does not seem to me to be greater than in gastrojejunostomy. Adhesions or an abnormally bound down duodenum may be contra-indications.

There is still some want of harmony between the physician and the surgeon in the treatment of gastric ulcer and it would be to the best interests of the patient if they could be induced to work together and each to recognize and admit his limitations. That there is room for both cannot be questioned. Let us again quote Mayo-Robson: "Leube has said that one-half or three-fourths of all cases of gastric ulcer will be cured by four or five weeks of medical treatment but if not cured in that time they will not be cured by medical treatment alone. In this view I thoroughly agree."

Considering the number of cases which relapse after relief or apparent cure, he concludes that the number of real cures by medical treatment is under twenty-five per cent., so far as reported cases go; while with surgical treatment, although these are usually the worst cases and those which have resisted cure by medical

treatment, the number of cases cured or completely relieved of all symptoms was over ninety per cent.

Cases. I have operated on eleven patients—in five doing a pyloroplasty somewhat according to Finney and in six doing a posterior gastrojejunostomy without a loop. There were no deaths and all the patients were cured or very much benefitted by the operation. Following is a sketch of the patients:

Case 1. T. S., white male; aged 58 years; clerk, had been troubled with his stomach for thirty years but especially during the last ten years—with nausea, vomiting, heartburn, abdominal distension, hyperchlorhydria, and intermittent pulse at times. His normal weight is 175 pounds and at time of operation he weighed only 130. Pyloroplasty May 14, 1903. In less than three months he had gained forty pounds in weight and ate everything. At present, five years after operation, he is in pretty good condition, but occasionally regurgitates and has to use lavage.

Remark. There was marked pyloric stenosis. I think in this case a gastrojejunostomy would have been better as the stomach was very much dilated and this would have given more complete drainage.

Case 2. M. K.; white male; aged 35 years; inmate of Government Hospital for the Insane. Had been vomiting for eleven months, and had lost about sixty pounds from his normal weight of 135 pounds. Dec. 14, 1905, posterior gastrojejunostomy without a loop. Patient soon regained his normal weight and is now apparently perfectly well as far as his stomach is concerned. Almost complete obstruction of the pylorus was found, caused by a mass of unknown origin.

Case 3. Mrs. C.; white female; aged 34 years; nurse; had been troubled for several years with excessive formation of gas in stomach and had lost weight and become thin and excessively nervous. March 5, 1906, pyloroplasty. Adhesions were found about the stomach but no ulcer or tumor was found. Improvement at once, and six months later she was twenty pounds heavier than previous to the operation.

Case 4. Referred to me by Dr. Jung. M. H. T.; white male; aged 48 years; bookkeeper; had suffered with his stomach for fifteen years

and for five years has been unable to retain any solid food. From 120 pounds in weight he now weighs eighty-three pounds. Pyloroplasty June 21, 1906—marked stenosis and dilatation of the stomach. July 12, three weeks after the operation he had gained seventeen pounds and continued to gain in weight, after his discharge and was well a year later when last heard from.

Case 5. H. R.; white male; aged 44 years; merchant; had suffered with his stomach five years, vomiting and burning in the stomach and twenty-five pounds loss in weight, hyperchlorhydria. Pyloroplasty July 25, 1906. Slight pyloric stenosis and dilatation of the stomach. Improvement was slow, the burning especially persisting, but now he is in good health.

Case 6. P.; white female; aged about 25; suffered a year from obstinate vomiting. Sept. 10, 1906, posterior gastrojejunostomy without a loop—no ulcer or stenosis found. Improvement followed but a year later she was not entirely well.

Case 7. D. C.; white female; aged 18 years; maid; had been troubled with stomach for a year, vomiting occasionally blood. An ovarian cyst had been removed, but she continued to vomit. Dec. 10, 1906, posterior gastrojejunostomy without a loop was done. No ulcers were found but the mucous membrane of the stomach presented a granular appearance near the pylorus. Improvement was slow but the vomiting finally ceased. Nineteen months later patient was again operated on for pain at site of the former ovarian cyst. Vomiting had ceased and she had fattened up considerably. Operation showed numerous adhesions—especially to the stump of the right broad ligament. The pylorus and gastrojejunostomy passage were both quite patulous.

Case 8. Referred to me by Dr. Franz Jung. E. O. P.; white male; aged 40 years; dentist; had been troubled with his stomach for ten years—dyspepsia, pain, burning and occasional vomiting—then tarry stools and later vomiting of blood in large quantities, threatening his life. March 5, 1907, five weeks after a severe spell of hematemesis and three days after the beginning of another, posterior gastrojejunostomy without a loop was done. Scars were seen on the stomach, the pylorus was thickened,

nodulated and a rough ulcerated surface could be felt. The mucous membrane visible had a granular appearance. A few enlarged glands were seen. Rapid improvement followed and the patient gained thirty-five pounds by May 1st. At present he is in good health, eats everything and weighs fifty pounds more than he did when operated on.

Case 9. Referred to me by Dr. Franz Jung. J. M.; male white; aged 62 years; clerk; had been troubled with dyspepsia and vomiting for fifteen years. Feb. 19, 1907, pyloroplasty was done. Marked thickening and stenosis of the pylorus, adhesion of pylorus to liver, dilatation of the stomach. Improvement was steady and by May 3rd he had gained twenty pounds. Now, nineteen months since operation, he is in good health and eats everything.

Case 10. A. J.; female colored; 44 years old; inmate of Government Hospital for Insane; had been vomiting almost daily for nearly a year. Feb. 5, 1908, posterior gastrojejunostomy without a loop was done. Relief of vomiting followed at once and continued for a while, but she still vomits at times.

Case 11. Referred to me by Dr. Jung. C. J. H.; white male; aged 22 years; merchant; had been troubled with his stomach about one year. Previous to that he had been treated for tuberculosis of the testicles. Vomiting was frequent and loss of weight considerable. June 3, 1908, posterior gastrojejunostomy without a loop. Light adhesions of pylorus and marked stenosis. Improvement at once and slow gain in weight—twenty-five pounds at the end of four months. Vomiting relieved completely and he eats everything.

BIER'S HYPERAEMIC TREATMENT—ITS PRACTICAL APPLICATION BY THE GENERAL PRACTITIONER.*

By W. A. STROTHER, M. D., Bedford City, Va.

I shall not endeavor to take up your time with a biographical sketch of Prof. August Bier, who originated this form of treatment, however much I should like to; nor shall I exhaust you further than necessary with the theory of Artificial Hyperæmia.

It is my object to put before you some of the simplest forms of hyperæmic treatment, which

may be applied by the general practitioner in every-day practice, independent of hospital facilities, trained assistants and without extensive apparatus.

Before going into this, however, it is necessary to consider briefly the theory of artificial hyperæmia, its different forms, and the methods of inducing it.

In using Bier's hyperæmic treatment, we produce a venous engorgement in a localized area or in an extremity. This is done by obstructing the venous flow without interfering with the arterial circulation.

The benefit derived from this venous engorgement, or hyperæmia, may be due to one or all of several things; namely:

1. An increased amount of blood in and around the diseased area. The benefit of this is obvious.

2. An increase in the leucocytes locally. A fundamental knowledge of pathology shows why this is of benefit.

3. An increase in the exudation into the tissues.

4. An increased opsonic index.

There are two kinds of artificial hyperæmia: *i. e.*, venous, or passive, that which we get by obstructing the venous flow; and active, or arterial, that which is produced by heat.

The different ways of producing hyperæmia are by means of cupping, or suction glasses, by constricting bands and by heat.

There are various forms of cups and glasses to fit any part of the body, all supplied with rubber bulbs, or pumps, for producing suction.

The bands used for constriction are the ordinary rubber bandage, the elastic-web band and rubber tubing.

The heat used in producing hyperæmia is generally dry heat, but other forms of heat are used.

In applying Bier's hyperæmic treatment, the technique varies according to the location and the nature of the affection being treated; but there are some rules that apply in all cases.

The treatment should never cause pain; rather, it should relieve pain, if we are dealing with a painful affection.

The pulse below a constricting bandage should not show any change.

The application should never produce a

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white, blanched appearance of the skin. The skin should become first red, then bluish.

An extremity on which a constricting band has been placed should never become cold; if it does, the band should be loosened.

Do not produce too much suction when using the cup or glass, as this is capable of doing harm by bruising the tissues.

Do not become alarmed at the somewhat bluish appearance and the swelling that takes place after applying a constricting band; if the limb remains warm and painless, and the pulse is not interfered with, no damage will be done.

Always allow the œdema produced by one application to subside before applying the bandage again. If necessary, elevate the extremity, between applications, to reduce the œdema.

Now, for the uses to which the general practitioner may put Bier's hyperæmia: There are many; but I shall only mention a few, which will be of particular interest, as they appertain to the treatment of affections met with in everyday practice.

Probably the most frequent use you will have for Bier's hyperæmia will be in the treatment of *boils, carbuncles, abscesses, etc.*

The method is as follows: The skin over the boil or carbuncle is cleaned, and an incision one-eighth to three-eighths inch long is made; then the edges of the cup are smeared with vaseline to make an airtight union with the skin; the cup is applied and gentle suction produced with the attached pump. The suction should not be made by a sudden jerk of the piston, but by a slow steady pull. The sudden suction causes pain.

After producing the proper amount of suction let the cup remain in place five minutes; then allow the air to enter the cup and remove it; wait three minutes and apply again for five minutes. Repeat this four or five times. The pus will be evacuated in this manner practically without pain, and the process of repair hastened.

In simple boils, one application is frequently all that is necessary; the wound is covered with a dry dressing, and the patient dismissed.

One advantage of this treatment is the small incision necessary, thereby diminishing both pain and disfigurement.

With carbuncles and abscesses, of course, a longer time will be required for a cure.

Passive hyperæmia is used successfully to abort boils, carbuncles, etc. For this, the cupping glass is applied for a continuous period of from ten to twenty minutes twice a day until all symptoms have disappeared.

When cups are applied and suction produced in the treatment of boils, etc., the patient feels a tight drawing sensation in the skin at first, but this soon disappears.

The treatment of *mastitis* is greatly facilitated by Bier's hyperæmia—suppuration often being prevented when treatment is begun early. However, should suppuration take place, a small incision, followed by suction with a properly fitting cup will effect a more rapid cure than other methods, besides relieving pain.

Suction cups are also used to increase the flow of milk from the breast. For this, the cup is left on for fifteen to thirty minutes.

In *infected wounds, stitch abscesses and ulcers* the use of suction hyperæmia is very beneficial.

Suction cups have been used with success in the treatment of *empyema*. The cup is placed over the sinus and suction produced. The cup may be left on for twenty to thirty minutes, or if it becomes full of pus it is removed, emptied and replaced. Under this treatment the sinus stops discharging and heals more rapidly than with just the drainage tube.

There are many more uses for suction hyperæmia, as for instance, in the treatment of lymphadenitis, gonorrhea, prostatitis, anal fissure and fistula, hemorrhoids, parotiditis, tonsillitis and numerous other affections; but I shall go on to the other forms of hyperæmia.

It is obvious that constriction hyperæmia is only applicable to diseases of the head, scrotum and extremities.

In diseases of the extremities, a rubber bandage two to three inches wide is placed around the extremity above and clear of the diseased area. The application of constriction hyperæmia is, as a rule, longer than suction hyperæmia—the bandage sometimes being left on for twelve hours or longer.

Constriction hyperæmia may be applied to the shoulder joint by placing rubber tubing around the joint, clamping the overlapping ends with artery-forceps, and holding the tub-

ing in place by means of tapes around the neck and chest.

Rubber tubing is also used on the scrotum, although web-bands may be used.

For the neck, in producing hyperæmia of the head, an elastic bandage made like a garter and fastened with hooks and eyes is probably best.

Constriction hyperæmia is particularly applicable to, and beneficial in, the treatment of various joint affections such as tuberculous joints, gonorrheal arthritis and articular rheumatism; it is also said to be of benefit in osteomyelitis if begun early.

In treating the above conditions the rubber band is applied and left on for six, eight or ten hours at a time, is then taken off, the œdema produced by it allowed to subside, and in two to three hours reapplied.

Constriction hyperæmia is valuable in the treatment of ulcers, of the extremities, extensive burns and some skin diseases.

It is said that constriction hyperæmia acts as a prophylactic against infection in soiled wounds, compound fractures and scratches received by physicians during autopsies.

Active or arterial hyperæmia is produced by heat, generally in the form of hot air. This is applied by the use of various hot air boxes or cabinets, which are made to fit any part of the body; also by means of hot air douches or sprays. The latter are very efficient in the treatment of neuralgia, sciatica, etc. Massage is generally used in conjunction with hot air treatment.

Good results are obtained in treating joint affections, especially gonorrheal arthritis, by using alternately constriction hyperæmia and hot air.

Before giving the case reports with which I shall conclude this paper, I wish to call attention to one important point. In using Bier's hyperæmia, do not neglect other appropriate medical or surgical treatment and depend entirely on hyperæmia to relieve the situation. It is not a specific, but it is a valuable adjunct in the treatment of many diseased conditions.

I report the following cases to show the technique employed and results obtained in individual cases:

Case I.—G., male, age twenty-four. Had

a "crop" of boils on buttocks and around anus. These had been treated in the usual manner and had taken from one to three weeks to heal.

When I first saw the patient there was a boil on the left buttock about an inch and a half from the anus, and another hard indurated area the size of a quarter about half-inch to the right of the anus. I incised the boil, making an incision about one-fourth inch long, and applied the vacuum cup, which I left on five minutes, thus evacuating most of the pus; then I took the cup off, cleaned it out and reapplied it for five minutes. This time a little more pus came, followed by some blood. On taking off the cup the second time the wound seemed clean with the exception of the "core," which was then lifted out with tissue forceps. As there was no further secretion except a little serum, I put on some dusting powder. The patient experienced no further trouble with the boil.

The indurated spot on the other side of the anus was extremely painful, and patient said it was the way all of his boils had started. I applied the cup twenty minutes twice a day for three days, and the expected boil disappeared.

Case II.—F., male, aged seventeen. Had two carbuncles on his neck, and an extremely tender swollen area which promised to be another. Four five-minute applications of the cup were used once a day on each of the carbuncles, and a moist bichloride dressing was worn constantly. One carbuncle, which was discharging slightly at first, healed in five days, and the other healed in six days.

The cup was applied for twenty minutes each day to the area which seemed to be a beginning carbuncle, with the result that it had almost disappeared by the sixth day, and did not become a carbuncle.

Case III.—B., male, age eighteen. Had traumatic orchitis six months before, and still had pain on taking much exercise. On examination I found both testicles somewhat swollen and tender and some induration. I used Bier's hyperæmia, by means of a half-inch rubber tube encircling the scrotum to its highest part. The tubing was overlapped and pulled tight and clamped with an artery forcep and left in place for twenty to thirty minutes.

After twelve days (one treatment being given

a day) the tenderness and swelling had disappeared, and no discomfort was experienced, even after violent exercise. There has been no recurrence five months after treatment.

Case IV.—J., female, age seventy-two. Had pustular eczema on left forearm. The radial side of the forearm from just below the elbow to three inches above the wrist was a mass of papules, pustules and crusts in the various stages of maturing. The pustules were coalescing in places, forming large sores. The entire forearm was swollen and somewhat painful on movement, but there was little tenderness, and the discharge was comparatively scanty. There were no marked constitutional symptoms.

The condition was of three weeks' duration when first treated. Various appropriate treatments were used for six weeks, with no apparent benefit, then Bier's hyperæmia was begun.

Four or five turns of a two and a half-inch rubber bandage were taken around the arm, just above the elbow, and made tight enough to distend the veins and make the skin blue. This was only continued for twenty minutes at a sitting. After the second treatment improvement was noted, and after twelve treatments the patient was discharged—the arm being perfectly well, with only a slight glazing of the skin where the largest scars had been.

For case No. IV., I am indebted to Dr. P. M. Strother, of Scottsville, Va.

IS MERCURY A SPECIFIC IN INFECTIOUS AND CONTAGIOUS DISEASES, AS WELL AS IN SYPHILIS?*

By H. E. JONES, M. D., Roanoke, Va.
Surgeon Rebekah Sanitarium.

In a private practice of twenty years I have treated several hundred cases of syphilis with bichloride of mercury. While under my observation, and taking active treatment for from a few months to five years, I have never known one of these syphilitic cases to contract a serious infection or contagious disease. This observation put me to thinking. I got the impression that bichloride of mercury was not only a specific for syphilis, but for all other diseases that are caused by living organisms, whether animal

or vegetable. We are aware of the fact that we have many antiseptic preparations that will kill any and all germs outside of the body when applied in sufficient strength, but we are handicapped with the belief that if we administer the germicide to the host in sufficient strength to destroy the parasite, the former would be destroyed instead. Hence, the profession has hesitated, has been timid, in using the most potent germicide in sufficient strength in all the germ diseases save one, viz.: syphilis. Of all the germs that are most tenacious to life, it is the one that is the cause of syphilis, viz.: *spirocheta pallida*. We know from literature on the subject, and many of us from experience, that bichloride in sufficient strength will kill this germ in the human being, more slowly by the mouth, skin and inhalation, but quickly and certainly by the hypodermic method.

Now, if this tough, tenacious, loathsome, disease-producing germ can be destroyed while occupying the position of a parasite in the living tissues, tell me why any other disease-producing micro-organisms, vegetable or animal, cannot be killed by it while living in the human organism? It is my firm belief that they can be killed by bichloride, or at least it checks their development and retards their growth, provided it is used as heroically as we use it in the treatment of syphilis.

For a number of years I have treated scarlet fever with bichloride, and I cannot recall a single death, when the cases came under my care early before complications or profound toxemia had developed. The past winter, spring, summer and fall, I have treated with bichloride as the specific agent, quite a number of cases of measles, pertussis, la grippe, pneumonia, and typhoid fever, without a complication or death. In the summer of 1907-1908 I treated a number of cases of intestinal diseases in children with bichloride and I do not recall a single case of death when the cases had been secured early.

In no disease except syphilis (and recently in tuberculosis) have I used the mercury salt hypodermically, but would not hesitate to do so in really severe infections. For an adult I generally use from 1-16 to 1-8 of a grain at a dose every two or three hours; children in proportion, except in severe syphilis. In such cases I administer it hypodermically 1-16 to

*Read before the thirty-ninth annual meeting of the Medical Society of Virginia, held at Richmond, October 20-23, 1908.

1-8 of a grain once a day for four days, and then twice a week for three weeks, and give them during the hypodermic medication 1-16 to 1-8 of a grain by mouth five or six times daily, and continue it for several months, or longer, if necessary.

It is my opinion that the great success physicians had before the introduction of the germ theory of disease, was due to their use of mercury in large doses in the treatment of all the infectious and contagious diseases. We, in modern times, consider these large doses obsolete, and have restricted the therapeutic use of the drug to surgery, syphilis, and a few minor functional diseases, and use it in practically homeopathic doses.

Dr. Barton L. Wright, (Ft. Lynn, Las Animas, Colorado), who has charge of a tuberculosis hospital for the United States Government, has treated thirty-five cases of tuberculosis that were infected with syphilis. He discovered the fact that tuberculosis is benefitted and being cured by the hypodermic use of, I believe, the salicylate of mercury. Thirty of these cases are showing the benefit of the mercury treatment "by the reduced pulse rate and temperature curve, an increased appetite, lessened cough, and gain in weight." He also says, "I have conclusively demonstrated that it will cure extremely advanced tuberculosis of the larynx and the pharynx in a remarkably short period of time. We have shown that it produces marked improvement in advanced pulmonary lesions, and that it also has a decided beneficial action on tubercular glands." The profession should wake up and take notice of Dr. Wright's discovery. It is important and convincing, and should not be brushed aside and dismissed from the mind as soon as read. Let us use the treatment in all future tuberculous cases and other infectious and contagious diseases, and watch the result; keep a strict record and report cases to the local societies and to the profession through the journals.

Dr. Koch has proven that bichloride is the most potent and powerful of all the antiseptic drugs, and of all the different preparations of mercury. It is stable in most acid, alkaline and neutral solutions; the alkalinity of the blood and tissues is due to disodium phosphate, carbonate and bicarbonate (*Chemical Diagnosis*,—Wood). When the bichloride is absorbed,

it remains unchanged and is excreted as such, and not as a non-absorbable albuminate; hence its germicidal effect is unchanged, and the tissues and blood cease to be a fit soil for germ development, and finally in a few days the germs are destroyed.

Dr. Laplace found that a solution of one to fifty thousand would destroy the germs of supuration. A 140-pound man would have about ten pounds of blood or 76,800 minims. One grain of bichloride of mercury given every twenty-four hours, in fractional doses, which can be done without injury, will make a solution of 1 to 76,800, and given daily for a few days, owing to its accumulation, would make a blood and tissue solution probably as strong or stronger than 1 to 50,000, which is more than sufficient, with the aid of the germicidal power of the blood and tissues to destroy the germs of syphilis and suppuration and any other living germ that may be present.

Dr. Bacilli and Dr. Jemma have used bichloride intravenously for cerebral syphilis with success. It is used in typhoid, rheumatism, erysipelas, and tuberculosis, and its curative effects upon these diseases is rapidly manifested. It is given in solution of 1 to 1,000 strength, 15 to 60 minims; dose enough of solution to make 1-64 to 1-16 of a grain of the drug.

Dr. Shoemaker has employed it hypodermically in psoriasis with complete success. Dr. Poncel in 1890 employed it in tumors of cancerous appearance, followed by their complete disappearance. Dr. Celli cured a case of traumatic tetanus. M. Julian cures gonorrheal rheumatism. Dr. Bacilli says, "The parasite of hydatid cyst of the liver is destroyed by a 1 to 1,000 solution, and the patient is cured."

In text-books we are told that it is used with marked beneficial and curative effects in scarlet fever, diphtheria, ozena, urethritis, gleet, tuberculosis, cystitis, tubercular joints, glands and abscesses, fermentative dyspepsia, digestive disorders of infancy, Asiatic cholera, entero-colitis, dysentery, scrofula, gastric ulcer pneumonia, tonsillitis, meningitis, pleurisy, endocarditis, and peri-carditis, peritonitis, measles, smallpox, pyæmia, septicæmia, typhoid fever, nephritis, malaria, and purpura hemorrhagica. It is a diuretic and a wonderful tonic and alterative. It increases metabolism, the corpus-

cles and hemoglobin of the blood, weight and strength.

A representative case of typhoid treated with bichloride I will report, and let you draw your own conclusions. For a few days before the patient quit his work he lost his appetite, complained of languor, headache, nausea, pain in back and limbs, and a tired, lazy feeling. On May 17th he remained in his room and dosed himself with calomel and quinine. On the night of the 19th he had a shaking chill followed with fever, aching all over, with a severe headache, and vomited fermented food and bile. He sent for me the morning of May 20th at 6 o'clock. I arrived at 8 A. M.; his pulse was 101, his temperature 101 1-2, tongue coated, complexion sallow, conjunctiva yellowish white, had cough and feeling of discomfort and oppression over front of chest, slight pains in left side in region of the spleen, stomach and bowels tympanitic and painful on pressure. I ordered calomel to be followed with saline, and made a prescription composed of strychnine, phenacetine, aspirine, salicylate of quinine and powder lacto-peptin, put up in capsules, to be given every three or four hours; diet was restricted. I visited him on the afternoon of May 21st; he had a temperature of 102, with a pulse of 105. I ordered 5 grains soft quinine capsule to be given every four hours for three doses a day; also continued the first prescription. I continued him on this treatment until May 26th, and his fever continued from May 20th (my first visit to him) to May 25th from 100 in the mornings to 102 in the afternoons, with slight typhinites and soreness of the bowels and stomach. When I visited him on the morning of the 26th (when his temperature was 100, and the same day at 4 P. M. it was 101 1-2, I discontinued the quinine and prescribed 1-16 of a grain tablets of bichloride to be given every two hours when awake. The following temperature chart will show for itself, giving the minimum morning temperatures, and the maximum afternoon temperatures while taking the mercury salt:

	A. M.	P. M.
May 26.....	100	101 1-2
27.....	99	101 3-5
28.....	98 2-5	100 2-5
29.....	98 3-5	100 2-5
30.....	98 4-5	99 4-5
31.....	99 2-5	99 3-5

	A. M.	P. M.
June 1.....	98 3-5	99
2.....	98 3-5	99 4-5
3.....	98 2-5	99 3-5
4.....	98	98 3-5
5.....	98	98 3-5

There was no tenderness nor soreness over the stomach and bowels after June 1st, six days after the commencement of the bichloride treatment.

You will observe from the above chart that his morning temperature dropped to normal on the third day after commencing the bichloride, and the afternoon temperature to 100 2-5. On the fifth day, the afternoon temperature dropped to 99 4-5 and continued at 99 3-5 until the tenth day when it dropped to normal. From the third to the eleventh day the morning temperature was normal except on the sixth day when it reached 99 2-5, and on the tenth and eleventh days it was 98 in the morning and 98 3-5 in the afternoon, when I advised the patient to take about three tablets a day for several days when I would call and see if his temperature remained normal. In three or four days I called to see him, and his temperature was still normal morning and afternoon, when I discontinued my visits.

In the *New York Medical Journal*, August 15, 1908, Dr. Merzbach of Berlin, in an article on the "Origin, Cause and Treatment of Syphilis," gives the latest mode of treating that disease with albumino-cholo-tannate of mercury, which can be administered in maximum doses by mouth, 7 1-2 grains daily, without any corrosive effect on the alimentary tract, blood or tissues, but says that daily doses of from 2 1-4 to 4 1-2 grains are usually sufficient to meet the requirements of successful medication, and can be repeated daily indefinitely without harm or discomfort, to the patient, with neither pain, colic nor diarrhea. He says that its absorption and elimination is regular and rapid. He begins with a dose of 3-4 of a grain three times a day for four or five days. On the sixth day, he gives 2 1-2 grain tablets twice a day and continues this amount for some days, and then, according to the case, gives smaller tablets more frequently during the day, until 7 1-2 grains a day are given. With this treatment the symptoms of syphilis rapidly disappear, mucous and skin lesions disappear in from twenty to thirty days. In secondary or old infections,

the lesions disappear in from one to two months. The administration of mercury albumino-cholo-tannate does not interfere with daily life, and is neither weakening nor dangerous, and the general health of the patient does not deteriorate.

If this preparation of mercury proves to be as potent as bichloride in the treatment of infectious and contagious diseases, and yet free from any disagreeable or objectionable effects, and is not dangerous to life, and is easy and convenient of administration, what a boon to humanity it will be!

The chief advantage Dr. Merzback claims for the albumino-cholo-tannate of mercury over the bichloride, is its convenient administration in tablet form, by mouth, and the relatively large amount of mercury that can be taken in 24 hours—7 1-2 grains of the former and 1-2 grain of the bichloride (the last amount is a small figure, as from 3-4 to 1 grain can be given a day without injury). It is a well known fact that all chlorides are antiseptic, some of them the most powerful we have, but not all of equal strength. Calomel can be given in 5, 10, 20, and 30 grain doses for a few doses, but cannot be continued for any length of time, as can be done with bichloride; with the former, the system receives a larger amount of mercury, but is not as effectual and decided a germicide as the bichloride. The same comparison can be made between albumino-cholo-tannate of mercury and bichloride. In giving 7 1-2 grains a day of the former, it is no evidence of its being as effectual as the stronger preparation of the latter, given in half and 1 grain doses.

Dr. L. G. Pedigo, a distinguished member of the profession, with wide experience, and President of the Roanoke Academy of Medicine, believes that 30 to 60 grain doses of calomel given in pneumonia is practically a specific for that disease. He believes at any rate that there is very little to be done after it is given, as improvement is prompt and decided. He informed me that one of the Northern hospitals (Roosevelt) learned this fact through a nurse giving a pneumonia patient, by a mistake, 30 grains of calomel, thinking she was administering that amount of bismuth: there was such a marked change in the patient's condition for the better, that the drug was afterwards given as a routine treatment in such cases with the happiest results.

It seems to me that the rational specific treatment in the severe acute infectious and contagious diseases, viz: tetanus, pyemia, septicemia, meningitis, typhoid, puerperal fever, diphtheria, smallpox, pneumonia, inflammatory rheumatism, typhus fever, scarlet fever, yellow fever, cholera, dysentery, malarial fever, relapsing fever, influenza, dengue, erysipelas, pertussis, varicella, parotiditis, syphilis, glanders, hydrophobia, plague actinomycosis, anthrax, Well's disease, miliary fever, pleurisy and gastro-intestinal diseases, would be to give a 30-grain dose of calomel, commencing the next day bichloride hypodermically, 1-16 to 1-8 grain twice a day, and 1-16 of a grain by mouth every two hours, continuing this treatment until the disease is controlled. If it is one of the more chronic forms of the disease, viz.: tuberculosis, syphilis, leprosy, etc., give the above treatment for a few days or weeks, and then give the albumino-cholo-tannate for an indefinite time or as long as may be necessary. With my own experience and a wide clinical experience of noted men with bichloride, it establishes the principle of specific effects of this drug in this important group of diseases. Hence I feel justified in suggesting this line of treatment in all the above named diseases in which it has not been commonly used as a specific. The most timid doctor need not have any fear in giving this treatment. It will not do the patient any injury. Watch the effect, and as soon as gums swell and teeth become slightly tender, stop the drug for a few days. Resume it as soon as swelling and tenderness disappears.

The hypodermic use of bichloride or any preparation of mercury is troublesome and will cause some pain and local soreness in the connective tissue, nerves and muscles at the sight of injection. Many patients will object to its use, but with tact and confident assurance that satisfactory results will most likely follow, they will usually submit. The doctor that does not care to carry out this troublesome treatment ought to have some doctor that will carry it out, especially in the severer infections.

It is said that for every disease nature has given a specific remedy for its relief. If such is the case, I believe she has simplified it and given us one remedy—mercury (and man, its synthetical chemical preparations and non-chemical mixtures) as a specific remedy for

all germ diseases. It only remains for us to use it with painstaking judgment, observation and care. I cannot but feel sure and certain that the mortality rate will be greatly reduced and thereby humanity greatly benefitted by the use of the drug. The ultra-scientific members of the profession—many of whom are skeptical, do not believe in *materia medica*, but have great confidence in the knife—must remember that the large proportion of humanity have a great aversion to surgery; they depend on the experienced and skilled general practitioner to give relief with drugs. All experienced physicians, those who daily apply the weapons at hand, have a great deal of faith in drugs. He knows and believes that many of them are useful and helpful, and that a few can be classed as specifics in a few, if not all, of the diseases of humanity.

Dr. Frank Lydston says, "The physician by drugs can produce anesthesia, local or general, relieve pain, produce sleep, stimulate or depress the circulation, allay nervous irritability, aid digestion, relieve constipation and hepatic torpor, produce emesis, diaphoresis, and diuresis, antidote malaria, and cure syphilis. What wonder that he has confidence in drugs *per se*, while rather skeptical of our knowledge of them!" "There must be a remedy, if I only knew," is a brow-contracting reflection to the conscientious practitioner, and so long as there are sick ones to heal, so long will he search for remedies, and so long will he read and believe in the literature that offers therapeutic hope.

I not only appeal to the physicians to wake up and take notice of the specific effect of mercury in germ diseases, but to the surgeon—for many of the dangerous infections have to be treated by him—for those that cannot be relieved by his skilled surgery, he has to resort to drugs as his weapon, and if he has not faith in them, and uses them not, and leaves the patient to his doom, he has not done his duty. The profession of medicine is devoted to the management of infections and pathological lesions caused by infections and injuries. The two great ways of healing them is by the skillful administration of drugs, and skillful surgery. All of us are taught both lines of treatment; we have no right to narrow down to one way alone to treat diseases. In the great majority of the diseased conditions, both means

have to be used, if the patient has the chance for his life that he should have. A good physician is a surgeon also; a good surgeon is a physician also. Why not? Are we not taught both means of treating diseased conditions? It is our duty to keep well informed on both means of healing in applying the art of our profession.

6 1-2 Salem Ave., S. W.

TREATMENT OF COMPOUND FRACTURES.*

By E. M. MAGRUDER, M. D., Charlottesville, Va.

In compound fractures the surrounding soft parts are lacerated so that the fractured bony fragments communicate by an opening, more or less extensive, with the exterior. Hence the treatment of these fractures is far more difficult than that of the simple variety. The reason for this is that the support ordinarily derived from the soft parts is lacking, reduction being less easily maintained and displacement more readily produced, the tendency to which is still further enhanced by the necessity of frequently dressing the wound. Hence deformity from non-union or shortening is more liable to occur unless coaptation of fragments is maintained by methods other than those employed for simple fractures.

The indications in the treatment are:

(1) Cleansing of the wound and surrounding skin surface by means of soap and warm water, the curette, and some antiseptic wash (Hydr. Bich. 1-1000 or creolin one dram to the pint of warm water). An anesthetic should be used.

(2) The maintainence of firm coaptation of fragments so that the wound may be dressed without removal of the retentive apparatus or disturbance of the fragments.

The second indication presents the difficult part of the proposition. It is unsafe to trust to the splint and dressings alone to maintain apposition, but this should be accomplished directly by fastening the ends of the bone together. The method of tying with catgut, silk, and wire, does not make close and immovable approximation and displacement to some extent is almost certain to occur.

A method that I have used with excellent results is this: The bony ends are held together

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by means of a steel plate (four inches long, one-half inch wide, and one-sixteenth inch thick,) with a hole at each end and one on each side of and one-half inch from the center, spanning the point of fracture, and fastened by one-half inch screws to the bared bony surface.

A permanent splint, properly padded, is then adjusted and firmly secured to the limb by adhesive straps one and one-half inches broad applied above and below the wound. These straps are reinforced by a roller bandage so arranged as not to cover the wound. The latter is then dressed with a separate dressing which may be changed as often as needed.

For the leg I use an iron splint which can be made at any blacksmith's shop. The cost is under two dollars. A piece of tire iron (one and one-fourth inches wide and one-fourth inch thick) is cut long enough to extend from the upper third of the thigh to the plantar surface of the toes, and bent to fit the curves of the posterior aspect of the thigh, knee, and leg, curving around the heel and then along the plantar surface of the foot to the toes. A metal thigh band (three-fourths inch wide, one-sixteenth inch thick, and two inches shorter than the circumference of the upper thigh) is rivetted to the upper end of the tire iron and at right angles to it. A similar but narrower ankle band is rivetted just above the ankle. A piece of sheet iron is then rivetted to the anterior surface of the iron corresponding to the length of the leg, about three inches wide at the upper end and tapering down to a width of two inches at the ankle. This flange is concave laterally and longitudinally to fit the rotundity and curve of the calf. The leg part of the splint is then padded with cotton and the whole wrapped from end to end, including the bands, with a roller bandage.

This splint is now applied to the posterior aspect of the limb, the ends of the padded thigh and ankle bands are snugly tied with wire; as the calf rests comfortably in the concavity of the broad flange, there should be padding enough under it to keep the posterior surface of the heel from touching the splint, otherwise a pressure sore will result. The splint is next anchored to the limb by adhesive straps one and one-half inches wide encircling both—one about

the knee, one about the ankle, and one about the instep. A roller bandage is then applied to the whole, binding the splint to the limb except at the seat of the injury. The wound is then dressed separately and is accessible at any time without disturbing the retentive apparatus.

After union has occurred the steel plate may be left in situ or removed by making small incisions over the screws, and unscrewing the latter, and then drawing the plate out at one end.

TYPHOID FEVER—IMPORTANCE OF EARLY DIAGNOSIS—FASTING—SPECIAL DIET—SURGICAL REST OF BOWEL—AND SIMPLICITY OF TREATMENT.*

By A. J. BURKHOLDER, M. D., Mt. Sidney, Va.

This disease has a very interesting history, and was for several centuries confused with typhus fever. Ancient writers describe in part what we recognize as typhoid; but to a physician of this country justly belongs the distinction of first differentiating, and setting forth clinically and pathologically this fever as a separate and distinct disease. From American sources even to-day we are able to study this disease with greater satisfaction than from foreign observers.

The time allotted will not permit of a discussion of the complex manifestations and types of infection, modes of entrance, systemic effect, and complications. Therefore we will confine this brief to the consideration of a few points found in the sick room—leaving those winged questions until our aeroplane is sufficient therefor.

With the advancement of medical science we are able to delve into the depths of mystery, defy disease by immunization and anti-toxin. Yet we must not forget that many of these valuable agents are only in their infancy of development, and many of the valuable tests employed in diagnosis are not infallible, are confirmatory if positive, and, if negative, in no wise proves that disease does not exist. The time has not yet arrived and never will, when we can in our laboratory diagnose the patient. That is what we propose to treat; therefore "let's come down." With the advancement of our profession, there is a growing tendency to

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wander away from convictions of bedside study. Yet what evidence has been produced to show that the clinical conclusions of eighty-five years ago should be displaced by the observations of to-day? The long-tail coat, the solemn face, the silent tread, the modulated tone, the lancet and depleting measures have gone, and with them the impression plate, bedside diagnosis. The clinical picture of typhoid fever as drawn by Chapman, by Wood, and by Thompson eighty-odd years ago stands as a living monument to-day to those profound students; and when compared with our most recent writings, those not yet dry from the printer's ink, they define clearly in every line those diagnostic symptoms observed at the bedside, upon which alone they depended.

We would here enter a plea for a close clinical study of disease, especially typhoid fever; for upon an early diagnosis, immediate in many cases, depends the life of the patient.

Even where the least suspicion exists it should be regarded typhoid and treated as such until you go and develop your cultures, search through available literature, and make several mathematical calculations as to possibilities. These means of diagnosis are to our credit. Yet let us not forget that too often valuable time is lost. The life of the patient and our success demands that we act then and there—no future time offered. To do this requires a higher degree of trained powers of observation; and such should be our aim, our first and main dependence.

Years ago—and so it is to-day universally admitted that the food factor is one of the most important questions to be solved. Every writer and every practitioner holds to his own belief, however, all with varying degrees of success—many claiming that in the event such diet produces disorder it should be withdrawn. The most natural question suggested by that direction is this:—by withdrawing the offending agent, can you also always withdraw the evil effect produced? If such diet is competent to produce disorders, is it rational to employ it in a single case? or withdraw it after the stomach rebels, after the crippled bowel has been unduly excited, after mixed infection has been favored, after the toxic system has been borne down to the very brink of the grave by increased sepsis, after the vital forces have lost all power of resistance, after

cell activity ceases from profound toxemia? And, we might add, after distention favors a long list of dangers.

That life-giving fluid that stands par excellence hermetically sealed, transposed by transfusion, possessing all the nutritive elements, the proximate principles, kind for kind, gives abundant evidence of its utility in its natural sphere. This connecting link that spans the chasm from darkness to light ceases to be food at a certain period. Nature so says. We will patiently await evidence to the contrary.

Let us leave off the milk and give beef bulion; possibly we will grow a better culture.

In the administration of drugs we consider the physiological action, the therapeutical action, and the toxic action; and we are very careful to carefully guard the latter action. Why should we be indifferent in regard to other substances that likewise have indirect toxic effect? Pathologically the gravest lesions exist in the bowel; we all admit that we are in the presence of gastro-intestinal catarrh with hyperplasia, and that irritating food increases peristalsis, which increases absorption of toxins, and sepsis thus produced increases nitrogenous waste more rapidly than the typhoid toxin.

Therefore, let us regard these cases from a surgical standpoint, and treat them as we would any other lesion of the viscera—rest, perfect rest, not only of every vital organ, but bowel rest. This means that nothing within nor anything from without should disturb the patient; even the very atmosphere he breathes should carry nothing but oxygen; not even one of those innocent lynx-eyed members of the winged fraternity should receive admittance to the sick chamber, for he is on no mission of mercy, neither when he goes forth does he bear good tidings. A quiet room and a nurse not afraid of work and possessing sufficient intelligence to realize that nursing consists in attending to directions given by the physician, are essential.

The following treatment has been employed by the writer in quite a number of cases without a single death, and only two complications, which, however, quickly made complete recoveries.

First visit.—If only suspicious of typhoid, mercurial purge, fasting 24 hours, water only allowed.

Second visit.—If digestive tract has been cleared, albumin water is allowed every 2 hours; if not, small dose of salts or oil is administered; fasting continued until laxative acts.

Third visit.—Albumin water continued. If symptoms produced by full bowel have subsided, liquid peptonoids are added to diet, either independent or alternating with albumin water. Intestinal antiseptic is now begun. My favorite is:

R	Bismuth subgallate	
	Bismuth salicylate	ââ 3ss
	Zinc sulphocarbolate	gr. iij
	Guaiaicol	gr. iv

M. Make capsules 24.

Sig. 1 capsule every 2 to 4 hours—depending upon number of stools. Continued every 4 hours after diarrhea ceases.

Fourth visit.—Tea and coffee added to diet if desired.

Nourishment has been given only during the day up to this period, which after this is given once only from 10 P. M. to 5 or 6 A. M. Provided we are dealing with a strong patient, no stimulant is given. However, with the majority sulph. of strychnia is begun early and increased as required—the time of commencement and dosage being indicated by toxemia, which should be given at the time the antiseptic is given, and both at regular time for nourishment, in order that frequent administrations may be avoided.

All nourishment is iced, and the patient is encouraged to drink freely of water. Good results are often secured in this direction by offering a full glass through a glass tube at the time the medicine is administered.

The usual lemon flavor of albumin water may be displaced by a dash of nutmeg if desired.

No change is made in this diet unless patient rebels, until practically all acute abdominal symptoms subside—after which one to three raw eggs a day are allowed. Oat meal gruel next is given. When the evening temperature becomes normal, a small piece of toasted sweet yeast bread may be allowed twice daily; fresh buttermilk from cream not over two days old given in quantities of one-fourth glass may be allowed with toast, or the yolk of a soft boiled egg is often preferred on the

toast. At this period the albumin water is omitted; but the liquid peptonoids are continued at intervals between semi-solid or solid nourishment. Enforced use of bed pan during entire illness.

The cold pack is used for half hour every two hours during the day and up to 10 P. M., while temperature remains above 103; from 8 A. M. to 10 P. M., if over 101; after this, usually at 1, 4, 6 and 8 P. M. will be ample to insure a good night. Enemata are resorted to if required. A broken dose of mild chloride of mercury at bed time is now frequently in order.

The ice cap is used in many cases and is of especial advantage in children. In children the intestinal antiseptic is not usually required.

The patient is kept in bed until the evening temperature remains normal, until reasonable strength has been regained, until absolutely all symptoms of fever have disappeared. After this we may with comparative safety permit the patient to sit up a while every morning; and my rule is to allow them to find their way out after arriving at this stage. Tonics are usually given for several weeks.

In detailing this simple treatment, I do not mean to convey the idea that simply a mechanical rule is followed; but I am on the other hand fully convinced that more fever patients would recover if the doctor in charge possessed only such drugs as are clearly indicated to conserve the vital forces.

In this disease greater danger lies in the administration of medicine than in the disease itself. The deportment of the physician should inspire confidence, and little fluctuations necessarily met with should be silently watched; but not treated through fear; for generally by the next visit they will be different. The constant and frequent change of medicine does serious harm.

Complications demand appropriate treatment.

THE PREVENTION OF TYPHOID FEVER.*

By W. A. PLECKER, M. D., Hampton, Va.

Few fields in medicine offer greater opportunity for the application of modern knowledge as to cause of disease, than the prevention of

*Read before the physicians of the First Congressional District at Hampton, Va., Jan. 5, 1909.

typhoid fever. These means may be applied to the management of individual cases, which after all is the true method of reaching the cause at its fountain head. Failure occurring here, as is so liable for various reasons, it falls then upon the community to protect itself in a wholesale way from the general infection of individuals.

We are all familiar with the scourges of this disease which have afflicted communities, carrying off scores or hundreds of the strongest and best. The Plymouth, Pa., epidemic of 1885 affords a classical example of the infection of a city's water supply by the careless disposal of the excreta of one patient, thrown out upon the snow, to remain until the thawing of spring carried the bacilli down into the stream supplying the town.

But typhoid fever, whilst it may occasionally affect an unguarded community in this manner, is not limited to populous centers for its victims. Individual families in country districts where known precautionary measures have been observed unsuccessfully, or not at all, furnish even more frequently our patients. Every patient afflicted with this, as with the other epidemic diseases, is the primary source of infection for others.

This infection may be either direct, and readily apparent, or it may be indirect through some form of carrier, and baffle all efforts at discovery.

The time to exercise most successfully preventive measures is in the presence of the patient, who throws off millions of bacilli in his urine, feces, sputum and vomitus. These should be passed into a solution of chloride of lime of the strength of six ounces to one gallon of water, and allowed to stand for three hours, or into a five per cent. solution of carbolic acid; or 1 to 500 of bichloride of mercury solution may be used, six hours being required for the latter on account of the insoluble compounds which it forms with the albumins. Unless this is thoroughly done, these discharges are thrown upon the surface of the ground, later to percolate into well, cistern or spring, and infect users of the water.

Burial of infected matter does not remove the danger, as these wells serve as cess-pools into which the soil within a radius of 100 or 200

feet may drain. For this reason, all wells and leaky cisterns in family settlements should be abandoned, or the water boiled before drinking.

We might suppose that there is no danger if excretions are passed into the city sewer without disinfection. Those who suppose this are in error.

If an inland town, the sewage will most probably find its way into the water supply of other communities, as we see now along the Ohio and other rivers.

If a coast town, such as we have in Tidewater Virginia, the sewage is liable to be at once taken up by oysters which thrive and fatten to a remarkable extent upon just such food. Eating them raw is like taking the germs almost direct from the patient. Only by a sufficient stay in uncontaminated waters can such oysters or clams be rendered safe.

On Thanksgiving day a family of six, consisting of father, mother, three children, and the husband of one of these, sat down to dinner at which raw oysters were served. In two weeks, two of the children who had eaten oysters, developed typhoid and in another week the third one. The parents, who did not partake of them, escaped, as did the young man who had previously had an attack of fever, though he also ate of the oysters.

Two cases were reported during the past season to the health officer of Elizabeth City County, of boys who were supposed to have been infected, the one from swallowing water whilst bathing near a sewer outlet, and the other from falling overboard.

Next to water infection at large, that of milk is second in frequency, the bacilli multiplying rapidly in this natural nutriment.

These bacilli may gain entrance from the water of an infected well used in washing the cans, or for a less commendable purpose, or from the milker who may be a carrier of germs, though apparently fully recovered.

Flies carry germs directly from fecal deposits to the family table and furnish an apparent and direct source of infection. These should be rigorously excluded from unsterilized typhoid dejecta, and should be kept from houses by careful screening.

Ice from an infected pond or river, or from careless handling may prove a source of danger.

Attendants upon typhoid patients may become infected by carelessness in taking food without thorough cleansing of the hands, and in other ways.

In our section, the most frequent method of infection is through the shallow surface wells, as has been described.

Cisterns which may be infected from surface drainage or from roof-washings come second as a source of water contamination.

The filters in ordinary use, while of service in removing the grosser impurities, cannot be depended upon to stop the passage of the typhoid bacilli, which may have been carried to the roof by English sparrows, or flying dust.

The inward pressure upon the sides or bottom of an empty cistern in this vicinity during high tides will cause almost any of them to leak, as I have observed in my furnace room only three feet deep, with solid concrete floor.

Good city water, if uninfected, is the safest, but, if accidentally contaminated, becomes a wholesale disseminator of typhoid. Communities should guard their water supply with the most jealous care, and a careful record and study be made by health departments of the possible origin of all cases.

Fortress Monroe, with a population of about 2,500 affords a striking example of what may be done by insisting upon the use of distilled water, and milk and oysters of known reliability. The only cases of typhoid which have occurred there for a considerable time have been imported.

The Board of Health of Elizabeth City county for the past five years has kept records, as far as they could be obtained, by having physicians make postal card reports. These reports show that during the first four years, typhoid fever was only one-seventh as frequent with users of our hydrant water as with users of wells.

Dried sputum and other excretions may cause infection as in the case of tuberculosis. Therefore, fumigation of the room and contents should be practiced as after other infectious diseases.

All soiled clothing, bedding, utensils, etc., should be carefully sterilized during the progress of the sickness with a final thorough cleansing and scouring at the time of fumigation.

No material effect will likely be produced over the number of bacilli in the bowel by intestinal antiseptics. It is pretty well established, however, that the administration of 7 grains of hexamethylenamin in water three times a day for two consecutive days each week, will cause a diminution of the number of bacilli in the urine. This may well be continued during convalescence when the urine is still infectious, and aids in inhibiting germ growth in the urinary tract.

Typhoid fever is undoubtedly mildly contagious, and contrary to the too frequent custom of entire neglect of this point, such patients should be isolated, and seen only by physician and nurse.

This observance of quiet and freedom from disturbance is at the same time an extremely important part of the care of the patient.

OBSTRUCTION OF THE BOWEL.*

By CHAS. T. SOUTHER, M. D., Cincinnati, Ohio.
Clinical Gynecologist, Cincinnati Polyclinic and Post-Graduate School.

The following classification is offered as a concrete way to study the subject *etiologically*:

Obstruction always Mechanical.	Inflam- matory.	Small Bowel.	Appendicitis. Post-Operative Peritonitis, Tubercular peritonitis, Volvulus.
		Pelvic Peritonitis.	Intussusception, Gall-Bladder.
		Large Bowel.	Tuberculosis. Colitis, Diverticulitis, Stricture, Syphilis, Bands and Adhesions.
	Non-Inflam- mato.y.	Small Bowel.	Polypus. Volvulus, Meckel's Diverticulum Hernia, Tumors and Cancer.
		Large Bowel.	Polypus, Malignancy, Benign Tumors, Hernia, Pressure of Tumors outside the Bowel.

The classification disposes of the etiology.

Diagnosis: (1) Abdominal pain; (2) Inability to move the bowel; (3) Distention of bowel, and (4) Vomiting.

The aggregate of the four symptoms mean obstruction.

*Original abstract of a paper read before the Mississippi Valley Medical Association, at Louisville, Ky, October 13-15, 1908.

Dilatation of the stomach is differentiated by the stomach tube.

Primary distention may be the cause of volvulus and obstruction.

The cardinal symptoms appear early or late, acute or chronic, depending on the presence of inflammation or no inflammation.

The use of gauze pads and drains in operative work should be avoided as much as possible, owing to necessary peritoneal trauma.

Age, sex, duration and mode of onset help to classify the case, as acute or chronic, inflammatory or non-inflammatory. Early in life usually is inflammatory. Late in life usually non-inflammatory, and due to gall-stones, enteroliths, malignancy or fecal impaction.

Obstruction of the small bowel means more acute symptoms and early surgery. Large bowel, slow symptoms and lower operative mortality unless the acute cases are operated very early. Monroe and others claim that all cases become inflammatory before a fatal issue, and that infection and bacteria will be found post-mortem in all cases, if the glands are examined.

TREATMENT.

Medicinal.	{ Cathartics.
Mechanical.	{ Enemas, Position, Massage.
Surgical.	{ Enterostomy, Colostomy, Complete causal Operation.

Should cathartics be used? In acute inflammatory cases—no; in non-inflammatory cases—yes.

We are never sure in a given case, where vomiting has not developed, that a cathartic will not do some good, and personally we would be willing to try it once anyway. If vomiting has begun, *never*.

Eserine salicylate hypodermically can always be tried for several doses. Morphine is indicated for pain and shock. Enemas are always indicated.

Enterostomy was advised and practiced by Nelaton 1840, and Littre did colostomy for cancer in 1710. These methods will certainly lower our mortality in severe cases, seen late, where a causative operation would be fatal. It takes off the pressure, gets rid of the putrid contents, and the secondary operation is usually well tolerated.

The technique published by Whitacre is very

excellent and has saved many lives. Self-retaining rubber catheter may be used as an intestinal drainage. The operations of Bodine are advised for colostomy.

Border-line post-operative cases *without all four* cardinal symptoms give most trouble, but should be treated with enterostomy before case gets in serious condition.

Moynihan says mortality is 50 per cent. but all over 10 per cent. is due to delay in surgical work.

Statistics from Cincinnati Hospital gives 1 death in 312, due to obstruction from 1867 to 1907.

Conclusions.—All cases seen late should have two stage operation. Enterostomy or colostomy, simply done under local anesthetic, will greatly reduce mortality. Relief of distention and drainage is the all essential feature in the absence of gangrene.

17 East Ninth Street.

Analyses, Selections, Etc.

Arhovin for Gonorrhea, Etc.

Dr. Blum, Medical Director, Salzerbad Sanitarium, Germany, (*Therap. Centralblatt*, Sep. 28, 1908), narrates a series of gonorrheal cases in which arhovin was used locally as well as internally, and acquiesces in the favorable opinion of the other writers. He never saw untoward effects, such as anorexia, eructation, renal irritation or exanthema. Taken by mouth, arhovin lessens in a short time the subjective disturbances of acute, as well as of chronic gonorrhea. It is inhibitive of gonococcal growth. Even chronic neglected cases were treated successfully with it, and often cured in six weeks. Complications are more rare and run a more benign course. Cystitis and pyelitis of both gonorrheal and non-venereal origin do well under it. Urinary tenesmus and pains generally soon diminish; the urine becomes clearer and attains a higher degree of acidity. The local use of arhovin also often gives results that leave nothing to be desired.

In a paper on "Newly Recommended Remedies," Dr. Schaeffer, of Giessen, describes arhovin, which he has found an internal and topical antigonorrheic of prompt and non-irri-

tant action, and says (*Der Prakt. Arzt, July, 1908*) acute gonorrheal anterior urethritis disappears in about three weeks, even when—as was the fact in one of my cases—gonococci are abundantly present. Injections of arhovin (in olive oil solutions, up to five per cent.) should be begun after the cessation of the stormy stage. Patients who cannot carry out injections, insert arhovin bacilli, and females use arhovin globules.

Dr. Karl Zingher, Chief Physician of the Ebergassing Hospital, near Vienna, adverts to arhovin in gonorrheal and non-gonorrheal genito-urinary affections (*Wiener klin. Rundschau, Nov. 8, 1908*). Its internal use is absolutely harmless, even when continued for weeks; in fact, according to Rosenbach, it has a sedative effect. The anesthetization of the inflamed mucosæ beneficially influences the general course of the disease. Burchard and Schlokow have shown that arhovin renders the urine bacterio-inhibitory, and increases urinary acidity. The flushing of the diseased vesical and urethral mucosæ by the arhovinized urine explains the good results. In non-specific cases, as acute and chronic pyelitis and cystitis, arhovin often within a short time transforms alkaline urine into an acid one and clears up the cloudiness. In chronic cystitis local treatment with antiseptic solutions cannot be wholly spared.

In the several hundred cases which supplied his data, Zingher has, all in all, seen realized the expectations based on the reports of other observers. Though in a small percentage of cases the anticipated success failed to materialize, at least to the desired extent, this may at times have been due to improper or inadequate usage.

In gonorrhea, he administered one or two arhovin capsules t. i. d., and locally five per cent arhovin-olive-oil solution, or arhovin bougies or globules. He was especially pleased in a female case of non-specific cystitis subsequent to intestinal catarrh. The urine was cloudy, grayish yellow and fetid, strongly alkaline, with traces of albumin and some indican, but no other pathological constituents. The sediment was almost entirely of leucocytes interspersed with numerous short cocci which were vigorously motile, and which on culture turned out to be *B. coli*. Two arhovin capsules t. d. and a daily bladder irrigation with three per cent.

boric acid. On the third day the urine was neutral, and in the following days it became feebly acid, clear, and urinary tenesmus was only sporadic. On the eighth day it was perfectly clear, and practically normal in reaction. Discharged cured.

Zingher has seen such satisfactory results from no other remedy, and praises arhovin especially because of its effect on subjective difficulties, and because of the amelioration of the process.

Book Notices.

Pathological Technique. By FRANK BURR MALORY, A. M., M. D., Associate Professor of Pathology, Harvard University Medical School, etc., and JAMES HOMER WRIGHT, A. M., M. D., S. D., Director of Pathological Laboratory, Massachusetts General Hospital, etc. Fourth edition, revised and enlarged. With 152 illustrations. Philadelphia and London. W. B. Saunders Co. 1908. 8vo. 480 pages. Cloth, \$3.00 net.

Except as a book for reference by the general practitioner—as he may have to examine his works on chemistry, etc.—this is not apt to have a general demand; but for the laboratory worker in pathology, bacteriology, etc., it is a book of very great service. It is also well adapted to the purposes of an up to date text book for the college student, or whoever proposes to give himself up to pathological subjects. In the laboratories of city and State Boards of Health, it is also of great utility. Staining of histological tissues, etc., occupy over 120 pages. Then follows a chapter on Methods of Examination of Animal Parasites, such as malarial organisms, rabies, *amœba coli*, etc. A section on Clinical Pathology concludes the book, which is thoroughly indexed.

Editorial.

Legislative Committee of Medical Society of Virginia.

The Executive Council of the Medical Society of Virginia has appointed the following members to compose this committee: Drs. Geo. A. Stover, of South Boston, chairman; H. S. MacLean, Richmond; J. Wilton Hope, Hampton; John H. Ayres, Accomac; and Wilbur B. Payne, Covington. This committee will have authority to appoint auxilliary committees

throughout the State to co-operate with it. It is to be hoped that these auxilliary committees will take the same active interest in their respective communities to educate the profession and the prospective legislators in reference to the merits of the Repeal of State License Taxes on doctors that the parent committee will undertake to do; so that when the General Assembly of Virginia convenes next January they will have been correctly informed. From time to time we will speak editorially of the proposed measures, and lend our assistance to the committee in laudable efforts. The committee will shortly organize, lay out its plans of campaign, and the profession of Virginia will be kept informed as to its progress by letters, circulars, etc.

Good Roads.

No one can be more interested in this subject than doctors generally; and yet what are they doing to secure good roads? We are constantly hearing of break-downs of strong vehicles on bad county roads, of horses being stalled by mud and mire, of dangerous creek-bridge crossings, etc., and still matters go on as if such things could not be prevented. The waste of energy, of time and money and—even religion—in getting over such roads should in themselves determine parties on taking steps to remedy such things. Even if only a few miles of main county roads can be built each year, and arrangements made for their proper maintenance after being built, such would be great encouragement to farmers to see that the lanes leading to these good public roads were put in order. The subject needs no argument, for the simple reminder that good roads are great economics, and help wonderfully in developing rural sections should be sufficient. Doctors, if they will, can be influential with county authorities and citizens in keeping the subject a live one before the voters and tax-payers until good is accomplished.

The Patrick-Henry Medical Society

Met at Martinsville, Va., January 15th. The meeting was largely attended by doctors from the adjoining counties. Papers were read by Drs. R. S. Martin, Stuart, Va.; J. M. Shackelford, Martinsville, Va.; M. S. Martin, Stu-

art, Va.; and J. R. Perkins, Spencer, Va. The following officers were elected for 1909: President, Dr. M. S. Martin, Stuart, Va.; vice-president, Dr. W. W. Morris, Preston, Va.; secretary and treasurer, Dr. J. R. Perkins, Spencer, Va.

Scientific Laboratory Help in Diagnosis.

The Abbott Alkaloidal Co., of Chicago, has just issued a booklet with the above title that is so valuable in its directions as to how to collect and prepare specimens to send to laboratorist for examination as to deserve special notice. That company has an outfit for sending such specimens for laboratory analysis for sale at one dollar, delivered. The price of the booklet is not given, but we suppose it is about 10 or 15 cents. It is worth much more on account of its well arranged tables of important urinary findings, gastric pointings, directions for sputum, pus, blood, feces collections, throat swabbing for diphtheria, etc.

Proceedings of the Medical Examining Board of Virginia,

In session at Lynchburg, December 15-18, have been received, and will appear in the next issue, the report coming in as we were going to press.

Obituary Record.

Dr. James F. Bryant,

Died at his home, Franklin, Va., January 16, 1909, after a prolonged illness—aged 67 years. He was a student at the University of Virginia when the Confederate war began, and returned home to organize a company for that service. He was twice wounded, and surrendered at Appomattox C. H. After a year again at the University of Virginia as a medical student, he went to New York and graduated from the medical department of the University of New York in 1867, and after serving time as house surgeon in some of the hospitals in that city, returned to Franklin, where he was engaged in practice until his fatal illness. He joined the Medical Society of Virginia 1872, and ever afterwards was an active member.

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Original Communications.

RECENT ADVANCES IN PHYSIOLOGY.

By THEODORE HOUGH, Ph. D., University Station,
Charlottesville, Va.
Professor of Experimental Pathology, University of
Virginia.

I. THE EFFECT OF STRYCHNINE ON INHIBITORY REFLEXES.

It is well known that many physiological mechanisms are under the control of antagonistic factors. Movement at a joint involves the co-ordinated action of flexor and extensor muscles; the heart beat is controlled by inhibitory and accelerator nerves; the arteries are played up by vaso-constrictor and vaso-dilator impulses.

In a joint at rest, the antagonistic muscles are in a state of tonic contraction, being excited thereto by a continuous outflow of nerve impulses from the central nervous system. Sherrington¹ has shown that during flexion, whether brought about reflexly or by stimulation of a flexor area of the cerebrum, there occurs, along with the contraction of the flexors, a relaxation of the tone of the extensors. In other words, the spinal flexor neurones are excited and the extensor neurones inhibited. In terms of the neurone hypothesis, this means that different collaterals from the same afferent (or pyramidal) neurone act *reciprocally* on the efferent spinal neurones; i. e., they *excite* the one at the same time that they *inhibit* the other.

Bayliss² has shown that the same is true for many vaso-motor reflexes. For example, when more blood is needed in any organ which is supplied with both vaso-constrictor and vaso-dilator fibers, the same afferent neurone excites the vaso-dilators and inhibits the tone of the vaso-constrictors; and the reverse is the

case when the reflex is constrictor. Many experiments indicate that the same is true in the case of the heart; i. e., during reflex acceleration there is often both excitation of the accelerator and inhibition of the tone of the inhibitory neurones.

Sherrington³ shows in the case of the skeletal muscles, that the reflex inhibition of the extensors during flexion, or of the flexors during extension, at a joint is transformed, under the action of strychnine, into a reflex excitation; so that, whereas we had formerly a *reciprocal* reflex to the antagonists (excitatory to one and inhibitory to the other), now both are excited.

Bayliss⁴ shows that exactly the same thing holds in the case of many vaso-motor reflexes; the depressor nerve, for example, normally excites vaso-dilator neurones and inhibits vaso-constrictor neurones; under strychnine it *excites both*.

This discovery necessitates a modification of our conceptions of the nature of the action of strychnine. Hitherto it has been supposed that it merely heightened the irritability of the cord or brain, and thus made any reflex easier; but in many cases it evidently does more than this; it actually changes the character of the reflex response. It is also interesting to note that the inhibitory reflexes which have been transformed into excitation under strychnine, again assume their normal character under chloroform.

Theoretically, the discovery is of the greatest interest, for it raises the question of the nature of inhibition itself. The inhibition mechanism must be of such nature that under the action of strychnine it is changed into an excitation mechanism.

II. THE PROCESS OF CARDIAC INHIBITION.

Howell and Duke⁵ isolated the hearts of

1. Sherrington: The Integrative Action of the Nervous System.

2. Bayliss: Proc. Royal Society, B. 80, p. 339.

3. Sherrington: Journal of Physiology, xxxvi, 185.

4. Bayliss: loc. cit.

5. Howell and Duke: American Journal of Physiology, xxi, 51.

dogs, rabbits, and cats, and kept them beating on a large supply of Locke's solution (NaCl , KCl , CaCl_2 , Na_2CO_3 , and $\text{C}_6\text{H}_{12}\text{O}_6$) under oxygen pressure. By suitable appliances the solution which had circulated through the coronary circulation could be collected and analyzed. They found that the fluid which had passed through the heart during stimulation of its vagus fibres showed a distinct increase in the percentage of potassium, amounting to as much as 29 per cent.

It had previously been shown that an increase of potassium in the circulating medium of the heart slows the heart or even brings the heart to rest; and Howell suggests that vagus inhibition produces some chemical change in the heart, whereby potassium is set free from combination with protein or other substance and thus becomes free to exert its inhibition effect.

In addition to this the same authors show that "stimulation of the vagus nerve causes no detectible change, within the limits of the delicacy of the method employed, in the calcium contents of the circulating liquid," and also that stimulation of the accelerators "causes no increase in the potassium contents of the circulating liquid."

III. INTESTINAL DIGESTION WITHIN THE STOMACH.

Baldyreff⁶ gives a number of very interesting observations from Pawlow's laboratory in St. Petersburg, tending to show that under certain physiological conditions there is a passage of the mixture of bile, pancreatic juice, and intestinal juice from the duodenum into the stomach. In the stomach this alkaline mixture may neutralize the acid reaction and actually carry more intestinal digestion of protein, fat, and carbohydrates within the cavity of the stomach.

The physiological conditions under which this backward passage of the intestinal juices into the stomach takes place are the ingestion of foods very rich in fat, excessive acidity of the stomach, and prolonged fasting.

The value of this in the case of very fatty foods is evident, in view of the feeble digestive power of the stomach for this food-stuff and helps to explain why so many people escape as long as they do the consequences of the frying pan. Its value is also clear in the case of hy-

per-acidity, for Baldyreff shows that where hydrochloric acid of different strengths is introduced into the normal stomach, this regurgitation of intestinal juices continues until the optimum degree of acidity for peptic-hydrochloric acid digestion is reached.

The reputation of Pawlow's laboratory for reliable work forces attention to these observations, which suggest hitherto unsuspected processes of normal digestion and help in explaining many pathological processes. The original paper will be found most suggestive.

THE BRONCHOSCOPE IN THE DIAGNOSIS AND TREATMENT OF DISEASE.

By RICHARD H. JOHNSTON, M. D., Baltimore, Md.
Surgeon to the Presbyterian Hospital; Lecturer on Laryngology in the University of Maryland.

Tracheo-bronchoscopy has revolutionized the treatment of foreign bodies in the trachea and bronchi. Instead of groping in the dark with forceps which are apt to seize the mucous membrane, the bronchoscope enables us to see the object and in many cases to remove it promptly. So wonderful have been the results in this class of cases that many of us may be led to believe that the usefulness of the instrument ends here. This, however, is not the case, as the workers in this comparatively new field know. In every large city of this and other countries, there are one or more men who are striving to give bronchoscopy its proper place in the diagnosis and treatment of disease. The work is discouraging in that it is always difficult to convince the profession generally that there can be any good in a medical innovation; it is encouraging in that one sees and studies a region of the body hitherto unexplored during life. As one becomes more expert in the passage of the tubes, the pathology of the trachea and the bronchi unfolds itself in a manner impossible by all other methods of examination. Von Schroetter in Europe and Jackson in this country have led the way in the diagnosis and treatment of diseased conditions in the respiratory tubes; they have shown us that not only may the simpler lesions, such as inflammation and ulcerations, be successfully treated, but also that more serious lesions directly dangerous to life as syphilomata, tuberculomata, etc., may be attacked locally. Von Schroetter has treated stenosis of the trachea and bronchi by inserting into the stricture and leaving in situ for var-

6. Baldyreff: Pfluger's Archiv. 121, p. 13.

iable periods of time, a hollow aluminum tube which dilates gradually. After remaining in for the required length of time, it is pulled out by a string attached to the upper end.

In treating diseases of the trachea and bronchi through the bronchoscope, it must be remembered that remedies cannot be used in the same strength as in the upper part of the respiratory tract. The solutions generally applied are nitrate of silver (two to ten per cent. solutions) and argyrol (twenty per cent. solution); with these drugs we can accomplish all that it is possible to do except in syphilitic lesions in which chromic acid (two per cent. solution) will probably do as much good as in such ulcers seated higher up. In examining pathologic conditions in the trachea and bronchi, one is struck with the tendency of inflammations to limit themselves to certain areas. We may for instance, find the disease in the trachea with no extension to the bronchi or vice versa; or we may see a circumscribed tracheal inflammation which is often located about two inches below the larynx and which sometimes follows "Grip" and gives rise to an obstinate cough. I believe that many "post-grippal" coughs can be traced to this area and some can be cured by proper local treatment through the bronchoscope. During the past year I have had occasion to examine quite a number of patients complaining of cough or soreness or both of these symptoms in the region of the trachea, in some of whom definite lesions were discovered through the bronchoscope. To three of the patients, I wish particularly to call attention.

In January, 1908, I was consulted by Miss E. W. for a troublesome cough of about five months duration. In September, 1907, she contracted a cold which terminated in the cough. She consulted her family physician who gave her the usual remedies with little or no benefit. Examination of the sputum was negative. In December she left the city and visited a health resort; during her absence the cough seemed to improve but on her return immediately became worse again. The paroxysms which came on at night, interfered with sleep. Under local anesthesia the bronchoscope was passed with the patient in the sitting position. The larynx and upper part of the trachea appeared normal; approaching gradually the bifurcation and about two inches above it, thick,

tenacious muco-pus was encountered. Upon wiping out the secretion an area of local inflammation was found. The mucous membrane was reddened and somewhat swollen and in the center of the diseased area a small, well defined ulcer with distinct edges could be seen.

The bronchi were slightly reddened but otherwise showed nothing abnormal. The patient had located a "sore spot" in the chest at about the bifurcation. Treatment was begun at the first sitting with the direct application of nitrate of silver (two per cent. solution). The immediate effect of each treatment was to increase the cough for several days after which improvement was noticed. The applications were repeated every week or ten days, gradually increasing the strength of the solution, until six treatments had been given. At the end of this time the cough had improved so much that further bronchoscopic treatment was considered unnecessary. At the fifth sitting the ulcer had practically healed. When the diagnosis of ulcer was made, we feared that it might be tubercular but the rapid healing under treatment proved otherwise.

In April, 1908, Miss M. F. consulted me for a cough and a sensation of tracheal soreness of nearly a year's duration. Expectoration was slight but the cough made the soreness more pronounced. The patient had been treated through the winter with various cough remedies and sprays locally with no benefit. She was greatly discouraged and the fear of tuberculosis was ever before her. A bronchoscopic examination showed thick, tenacious secretion clinging to the tracheal walls; after its removal the mucous membrane appeared red and slightly thickened. The bronchi were normal. The diagnosis of subacute tracheitis was made and treatment with nitrate of silver instituted. The inflammation was treated directly through the bronchoscope eight times. The patient left the city well and has remained so.

Mr. C. E., for several years, had had attacks of cough and soreness in the trachea which he located about two inches below the cricoid cartilage. The cough was dry with the occasional expectoration of a small plug of thick, tenacious mucus. He had formerly a fine tenor voice but had been forced to give up singing from the inclination to cough during the midst of a song. Examination with

the direct laryngoscope was successful but the bronchoscope could not be passed because the patient could not extend the head sufficiently. Though no lesion could be seen through the laryngoscope, we decided to make applications of nitrate of silver to the tracheal mucous membrane. After several treatments improvement was noted; the patient could sing without interruption and the soreness disappeared.

These cases prove that tracheo-bronchoscopy is useful and practicable in the diagnosis and treatment of disease. Dr. Chevalier Jackson, whose experience has been very large, reports many cases in which the diagnosis could not have been made with any degree of certainty without the aid of the bronchoscope.

From my limited experience with tracheo-bronchoscopy, I have drawn the following conclusions:

With practice the introduction of a rigid, straight tube into the trachea and bronchi is not difficult.

The bronchoscope can be introduced in nearly every adult case under local anesthesia.

The hypodermic injection of morphia and atropia is a great help for the successful manipulation of the tubes and for drying up secretion.

The mucous membrane of the trachea and bronchi is seen as clearly as is the mucous membrane of the throat with the head mirror.

In none of my cases has a bad result followed; we may say that the method is free from danger.

When we succeed in convincing the profession that tracheo-bronchoscopy is a valuable means of diagnosis, great advances in the living pathology of the tubes and even of the lungs will certainly follow. The tertiary bronchi can be seen with a good light.

Tracheo-bronchoscopy is just as valuable in the diagnosis and treatment of diseased conditions as in the removal of foreign bodies.

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SOME POINTS IN MORBID PSYCHOLOGY.*

By FREDERICK PETERSEN, M. D., New York, N. Y.
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The practice of the general physician touches upon psychology at many points. He not only

has, at times, to do with cases of insanity and epilepsy, but more frequently still he encounters hysteria and neurasthenia, tired out nervous systems, eccentric personalities, nervous children who may later develop mental disease, as well as all the deliria associated with fevers, pneumonia, apoplexies, brain tumors, alcohol and drug habits and the like. In reality the general practitioner must come in contact with some mental abnormality, however small, in every sick patient with any kind of disease, even if it be only a mental depression for which he often unconsciously prescribes hope with his pill or potions. Every physician is a psychotherapist, and it may be said quite truthfully that he is successful in direct ratio to the quality of his psychotherapy. He is obliged to treat both body and mind because of the psychophysical parallelism that admits of no separation of the two.

With this preliminary outline of the many relations between morbid psychology and the work of the general practitioner I am going to discuss only a few of these relations.

If there were time I should like to discuss with you the part played by morbid psychology in certain historical events and movements. You will recall the saying of the French alienist, Moreau de Tours, that all the great accomplishments of the world have been the work of madmen. Like many another aphorism, this has some truth as a basis. It is certainly true that many wonderful things have been done by individuals who were subject to what we call abnormal nervous and mental symptoms, such as visions, trances, fainting attacks and the like. Mahomet, who founded one of the great religions of the world, seems to have had visions, trances and hystero-epileptic seizures. Swedenborg, a practical scientific man, and one of high genius, who created a religion counting among its devotees tens of thousands of the best people in all lands, saw visions and claimed to be able to see events occurring hundreds of miles away. Napoleon, who changed the political geography of Europe and made and unmade kings, had petit mal and is said to have had hallucinations at times. Perhaps the most remarkable person in history is Joan of Arc. Picture to yourselves a simple peasant girl, in a barbarous century, untrained, unable to read or write,

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who at the age of fifteen had already resolved, under the inspiration of her voices, to break the English power that had dominated France for more than one hundred years. At seventeen years of age she was made commander-in-chief of the armies of France, displayed astonishing military genius, over-rode the generals who opposed her, planned her campaigns, selected with unerring instinct the best men for the most responsible positions, worked day and night over the endless details of organization and administration of the army, but always under the guidance and direction of her voices. She led her soldiers to victory after victory till she crowned Charles VII king of France and destroyed the English power. She seemed to have foreknowledge of many events, of her own future, of her first wound, of her being made a prisoner at Compiegne, of her death. More remarkable than anything in her military career is the story of her conduct at the Rouen trials. After a brutal prison life in chains for nearly a year, she was brought before a jury of sixty picked intellectual men for cross-examination. For three months she sat before them, often six or seven hours a day, answering their questions. Every trap, every snare that cunning could devise, was laid for her, yet she was more than a match for them. Such answers to such questions are hardly to be accounted for on any theory acceptable to scientific men to-day. She was burned to death at the age of eighteen. Every fact in her wonderful history is a matter of documentary proof, of legal record.

There are other seers of visions and dreamers of dreams over whose names I should like to linger, but this Joan of Arc is pre-eminently an example of the kind of mind under consideration. Such wonders baffle us. It is claimed by many that these illustrious beings who have exhibited what we physicians call morbid mental symptoms, are different from ordinary individuals because they are inspired, that they are not abnormal but rather supernormal. While it is safest for us as medical men to accept only such phenomena as true and actual as come within the range of natural manifestations demonstrable by scientific method, yet we must keep in mind "the million acres of our ignorance," and never be too positive in our opinion of the unexplored and unknown regions

of the mind. "There are more things in heaven and earth, Horatio, than are dreamed of in your philosophy." When, on the other hand, we examine the biographies of some of the supreme intellectual giants like Plato, Aristotle, Shakespeare, Newton, Goethe, Darwin, Spencer, we are not able to discover among these any such extraordinary phenomena.

What is insanity? I am not going to attempt to define it. Too many medical men have tried and failed to formulate a definition adequate from the medical and legal point of view. Let us rather say with the layman that insanity is a long dream. He said also that a dream is brief insanity. There is indeed a more than superficial resemblance between dreams and insanity, so close a relation, in fact, that many psychiatrists are now devoting themselves to a study of dreams as a part of their clinical and scientific work. There is in both a prominence of visual and auditory hallucinations, a tendency to the reproduction in memory of old experiences, the imaginary fulfilment of wishes and desires, baroque associations, chaotic flight of ideas, incoherence, weakened judgment, disorientation, or loss of sense of time and space, and divisions of personality. In fact, there is no phenomenon that presents itself in dreams which we may not observe among the insane of an asylum ward. Sometimes insanity first manifests itself in dreams, though the mind is still normal by day. In alcoholism dreams sometimes foreshadow the characteristic alcoholic delusions (of infidelity, etc.) and dreams may be the equivalents of epileptic seizures. Sometimes in patients just recovered from insanity who are normal by day, there is a nightly recurrence of insane delirium in sleep, a species of nocturnal insanity. A terrible dream may usher in insanity, which then concerns itself with the material created by the dream. Dreams at times induce the imperative ideas and impulses of neurasthenia. Thus in a way we may look upon insanity, in itself a pathological condition, as a summation of periodically recurring normal dreams, as a kind of reduction of consciousness, such as exists in the dream-state. Sanity is the sunlit day of full consciousness; insanity the moonlit night of subconsciousness, full of mysterious and fantastic distortions of reality.

The examination of a patient with mental disorder is a much more complex process than that of a case of physical disease, for it is necessary in the former not only to ascertain the present physical condition, as with your ordinary patients, but also to investigate the mental state which involves the employment of unusual and new methods, and brings us into contact with a novel series of psychic phenomena; and moreover, to attain our end we need to study the whole past life of the patient, his disease, accidents, schooling, occupation, environment, temperament and character. Nor can we stop here, for it is of the greatest importance to inform ourselves as to conditions among his antecedents, to determine the type of family from which he sprang, and the presence or absence of a hereditary taint. There is, therefore, much to learn even before seeing the patient in person. The history of a case of insanity as now recorded in our New York State hospitals makes a rather formidable volume. It includes every kind of physical record made in general hospitals, as well as a thorough survey of the patient's life and ancestral conditions, and keen psychological analyses of his psychosis and its beginning and progress.

The question of heredity in nervous and mental disease is fortunately growing in public interest, and of late years I have frequently been consulted by persons desiring to marry as to the probable bearings of insanity or epilepsy in one of the families of the proposed alliance. I am inclined to be lenient, though careful, in making decisions here, for a thorough study of the problem of heredity in relation to nervous and mental disease has yet to be made. Though epilepsy is the most strongly hereditary of all neuro-psychoses, I have known epileptic parents to have normal children. Curious and remarkable as are the facts of heredity as we see them in connection with nervous and mental maladies the heredity of normal organs and functions as shown in every reproduction of animal or plant life is more wonderful still when we come to look closely into it; and we must not lose sight of the fact that with every birth normal heredity presses down upon the newcomer with all the force of a hundred million years to make and keep him an average normal creature. We may cut off the tails or ears or horns of countless generations of our domestic animals,

but these appendages continue to reassert themselves at every birth. Perhaps we need not think too seriously of the prospects of the human race if in our own country we contrast the 150,000 insane and 80,000 criminals with the 80,000,000 normal human beings.

But whatever optimism we may feel as to the progress and high destiny of the race, that has triumphed over all obstacles from the earthquakes, deluges, glacial periods, carnivorous monsters, warring tribes of ancient periods to the wars and plagues and famines of historic times, we as physicians, must fight strenuously for the individuals who are perishing all around us from preventable disorders. The race will doubtless take care of itself. The percentage of insanity acquired through preventable causes like alcohol and syphilis is very large. In the State of New York there are about 30,000 insane in the public and private hospitals. Twenty per cent. of these owe their insanity to alcohol,—6,000 persons. As each insane person represents an approximate loss to the State of \$400 annually, New York loses, then, some \$2,400,000 annually through the ravages of alcohol as regards insanity alone, without reference to pauperism and crime. As regards syphilis, some 5,000 patients have died from that meta-syphilitic and fatal disease, general paresis, in the State hospitals of New York during the past nineteen years. And paresis as you know, prefers the able man in the prime of his life and activities.

Now to turn for a little to the classification of mental disorders. I will first call your attention to the following grouping which seems to me at this time to answer best the needs of the general practitioner:

A CLASSIFICATION OF MENTAL DISORDERS FOR GENERAL PRACTITIONER:

Toxic and Exhaustive Psychoses:

Puerperal	Alcohol
Lactational	Morphine
Renal Disease	Cocaine
Typhoid	Chloral, etc.
Pneumonia	

Psychoses with Nervous Diseases:

Polyneuritis	Epilepsy
Chorea	Hysteria

Psychoses with Organic Brain Diseases

Apoplexy	Trauma
Arterio-Sclerosis	Meningitis
Tumor	Insolation, etc.
Syphilis	

Manic-Depressive Insanity:

Melancholia	Mania
<i>Dementia Praecox:</i>	
Hebephrenic	Paranoid
Katatonic	General Paresis
Paranoia and Paranoid Conditions	
Senile Psychoses	
Constitutional Psychopathic States	
Idiocy, Imbecility and Feeble-mindedness.	

You know that the immense progress made in surgery and general medicine in the past thirty years is also reflected to a great extent by a marked progress in psychiatry. We have gained enormously from the clinical and therapeutic standpoint, and there has been advance in our knowledge of etiology and pathology. You will note in this classification some new terms, particularly manic-depressive insanity and dementia praecox. The mania and melan-

cholia that you were formerly taught to recognize as separate syndromes, have now been brought together under the one term for they seem to be only different phases of some one underlying pathological process. You will remember that the cardinal symptoms of the two disorders were as follows:

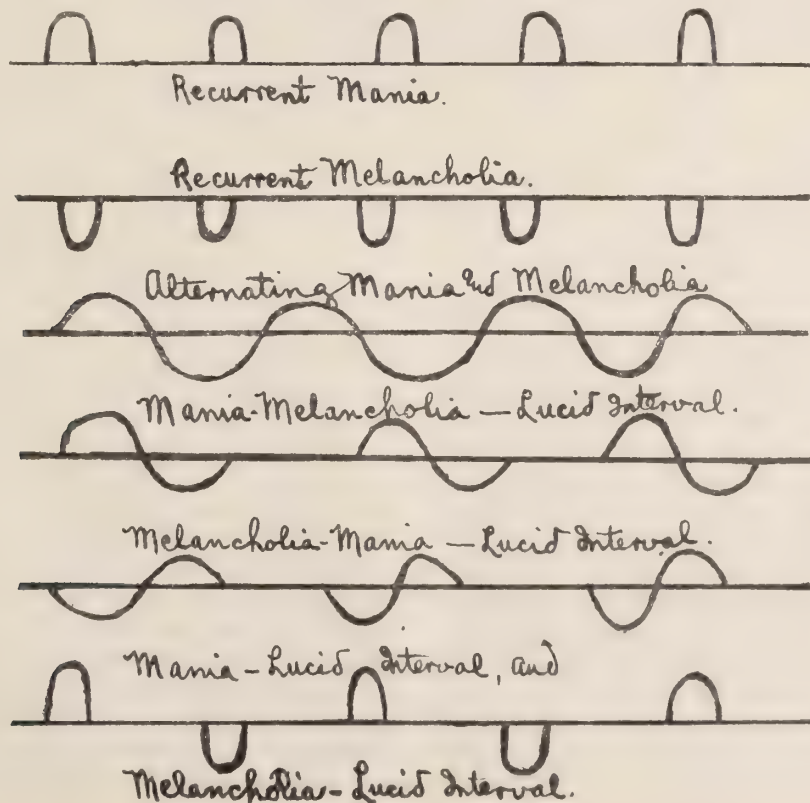
Mania:

Exaltation
Accelerated flow of thought
Motor excitement

Melancholia:

Depression
Retarded flow of thought
Motor inhibition (stupor)

You will recall too, that we had long known a singular disorder under the name of circular insanity or alternating insanity, which was characterized by alternations of mania and melancholia, sometimes with and sometimes without lucid intervals. To illustrate by curves representing exaltation and depression above and below a normal emotional level we were familiar with the following variations:



Now, it was found by a more thorough clinical study of our patients over long periods of years, including the past history before admission and the history subsequent to discharge from the asylums, that single attacks of mania or melancholia were among the greatest rarities, that recurrence of attacks is the rule, and that the circular or alternating type is far more common than we used to believe. But a still more interesting point brought out by this more careful investigation of the clinical symptoms is that there are many cases in which some of the antagonistic symptoms described above are combined in the same patient at the same time. Such cases are neither pure mania nor pure melancholia, but a mixture of the two. For instance, *exaltation* and *motor inhibition* are the symptoms in a type known as manic stupor. *Motor excitement*, *flight of ideas* and *depression* are the manifestations in the type called agitated depression. *Motor excitement*, *exaltation* and *retarded flow of thought* are the curious mixture in the type of insanity denominated unproductive mania. All these facts taken together seem an unanswerable argument in favor of the new designation, manic-depressive insanity. The prognosis as regards single attacks is good, but bad as to recurrence and complete cure.

The other term, dementia præcox, is perhaps not so successful a conception in nosology, and it is clearly unfortunate in its etymological make-up. But it is a phrase that has come to stay during our lifetime, at least, and we must make the best of it. Dementia præcox is a kind of waste basket into which we put many mental diseases that are not easily placed among such clear-cut syndromes as manic-depressive insanity, general paresis, the senile psychoses and paranoia. Into that waste-basket we have thrown all the psychoses of young people, that we used to know as primary dementia, masturbational insanity and insanity of adolescence; the cases of katatonia which we formerly classed as melancholia with catalepsy; all old-time chronic maniacs with their delusions of being kings, queens, potentates, etc, and the chronic melancholias with their delusions of being followed and persecuted, together with most of the cases of puerperal insanity and insanity of the menopause.

It is of great practical importance that the

general practitioner should be familiar with the symptoms of dementia præcox, because the prognosis is very bad. Very few cases recover. It is a dementing psychosis, *i. e.*, a psychosis in which the cardinal symptom is a progressive weakening of the mind. But it has a vast array of symptoms, and if I attempt to give a definition of the disorder you will understand why I say that it is not as clear-cut an entity as some of the other types of mental disease, like general paresis and paranoia, and why I intimate that it is not a permanent designation, but will ultimately give way to several other terms when we have learned more of the pathology of insanity. Here is the definition: Dementia præcox is a disease beginning usually in early life, and characterized by a more or less marked and peculiar enfeeblement of mind, but manifesting upon this basis a considerable variety of symptoms, such as emotional indifference, weakness of judgment, flight of ideas, verbiage, automatic obedience, catalepsy, echopraxis, stereotypy, negativism, mutism, impulsive actions, affectations, grimaces, unemotional laughter, delusions of depressed or grandiose nature and hallucinations.

Now I feel that you are mystified and confused by such a catalogue of symptoms in which there are introduced many terms that I am sure are somewhat new and unfamiliar to you. I question whether I ought to fatigue you by attempting to define them, but I must try to give you some sort of a clinical picture of the disease by an analysis of the definition. First, then, it is a disease chiefly of early life. Sixty per cent. of the cases begin before the age of twenty-five years. Then I said "characterized by a marked and peculiar enfeeblement of the mind." It is not an equal weakening of all the mental faculties, but a selective deterioration. In the terminal stages the deterioration is general. But at first and sometimes for years we find the most noteworthy symptom to be *emotional enfeeblement*. Now in mania there is emotional exaltation, in melancholia emotional depression, and in dementia præcox emotional failure. This emotional failure is shown in loss of interest, loss of power of attention and general indifference. With this there is also weakening of judgment. On the other hand the memory is unaffected, the perception of external impressions is unimpaired, and orienta-

tion is undisturbed. No matter how dull and stupid he may appear, the patient notes what is going on, remembers well what happens, and knows where he is and recognizes friends and relatives. There are many cases of dementia præcox which are for years undistinguishable from hysteria, and indeed there is a close resemblance between the two disorders. In both we are often able to discover by psych-analysis and word-associations the presence of some "emotional complex," some psychic shock or trauma, which has taken possession of the mind and determined all the morbid symptoms. Such an emotional complex may feed upon the functions of the soul as a cancer feeds upon the body.

To make a brief digression here I spoke just now of word-associations, and I should like to say a word or two of this remarkable discovery of Jung, which may not be familiar to all of you, but which has become a potent means of investigating the workings of both the conscious and the subconscious mind. Some of you may be familiar with the method through Munsterberg's presentation of it, without credit to Dr. Jung, in McClure's magazine about a year ago. A word is spoken by the investigator, and the patient is expected to respond with another word as quickly as possible. The time between the two words may be measured with a 1-5 second stop watch. A long reaction time indicates that the word has a particular emotional value. Using a series of such words is like fishing. Each word is bait on a hook thrown into the sea of the subconscious, and the species of fish that likes the bait best is caught and brought to the surface. The following is a good example of the way the method works:

Among a series of quite indifferent words given to a patient these four associations had so long a reaction time that it was certain that some emotional complex lay behind the reactions

Water	.....deep	.....5	secs.
Ship	.....sink	.....3.4	secs.
Lake	.....water	.....4	secs.
Swim	.....can swim	.....3.8	secs.

All the other associations had reaction times averaging about 1.5 seconds. Led by these clues to question the patient, it was discovered that he had recently attempted suicide by drowning. Water, lake, ship, swim were words that struck that emotional complex.

Three types of dementia præcox are recognized—the hebephrenic, katatonic and paranoid. The hebephrenic type is a simple progressive enfeeblement of the mind such as we have just described. The katatonic form is distinguished by the presence in addition of stupor or excitement, with negativism, stereotypy and suggestibility. Negativism is resistance to everything, to dressing, feeding, answering questions to passive movements, and includes, of course, mutism. Stereotypy is the constant repetition of stereotyped words and phrases or of stereotyped movements, grimaces, etc. Suggestibility is automatic obedience. When you place the patient in any conceivable attitude he remains there. He is cataleptic and with that form known as *flexibilitas cerea* or waxy flexibility. Whatever you say to him, question or command, he simply echoes exactly what you say (echolalia) or he may imitate what you do, our attitude or movements (echopraxis).

The paranoid type is characterized by a rapidly developing mental weakness and the presence of marked hallucinations of the senses and paranoid species of delusions.

(Concluded in next issue.)

A CONSIDERATION OF SOME INTESTINAL DISEASES DUE TO METAZOAN PARASITES.

By W. GUY HOPKINS, M. D., Richmond, Va.

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The most important many-celled animals, or metazoons, which produce internal diseases in man may be divided into three classes: Flukes, tape worms and round worms.

Flukes are small, flattened worms consisting of one segment, from about one-quarter to one and a quarter inch in length. Man is infected with the larval form of this parasite either by mouth from polluted drinking water, or, possibly, through the skin. The larvæ bore their way through the tissues selecting different organs for their final location, so they are commonly classified according to the organ which they habitually infect, as liver flukes, lung flukes and blood flukes.

On reaching the organ of predilection the larvæ develop and the adult attaches itself to the tissues from which it derives its nourishment.

*Read before the Richmond Academy of Medicine and Surgery, December 8, 1908.

The irritation produced by the parasite and its eggs (which are discharged in enormous numbers) gives rise to inflammatory reaction, and a highly vascular tissue grows around the infected area. This tissue is very friable and bleeds easily, and hemorrhage is a prominent symptom of all varieties of fluke infection.

Infection with the lung fluke (*paragonimus westermani*) is known as parasitic hemoptysis. "The sputum in these cases contains blood which is always arterial, enormous numbers of the eggs of the parasite, pus, mucus, alveolar and bronchial cells, and Charcot-Leyden crystals." The patient has no fever, the symptoms being cough, hemoptysis and secondary anemia. The diagnosis is made by an examination of the unstained sputum for the eggs of the parasite, which are oval and about 50 by 100 microns in size, slightly granular, with a distinct "lid" at one end.

The adult liver fluke (*opisthorchis sinensis*) inhabit the bile ducts and gives rise to cholangitis. The chief symptoms are jaundice, enlargement of the liver and bloody diarrhœa. There is rarely fever, but the pressure on the inside of some of the blocked, inflamed bile ducts may at times cause excruciating pain. The diagnosis is made by a careful examination of the feces. The eggs are ovoid, larger at one end than at the other, about 16 by 26 microns in size, with a "lid" at the small end and a small spine at the other.

The blood fluke (*schistosomia haematobium*) inhabits the portal veins. In this infection the inflammation is caused entirely by the eggs of the parasite. These work their way from the abdominal veins into the tissues of the bladder and sigmoid flexure. Inflammatory reaction is set up in these localities and papillomatous growths are produced through which the ova make their way into the lumina of these organs. Hematuria is the most prominent symptom of the disease, the condition being commonly known as Egyptian hematuria. Other symptoms are pain and tenderness over the loins and pubes. When the sigmoid is involved, dysentery supervenes. Secondary anemia is proportionate to the amount of blood lost. The diagnosis is made by an examination of the urine for the eggs of the parasite. These are broad spindles, 60 by 140 microns in size, with a sharp spine at one end.

Flukes which habitually infect men are, as yet, rare in the United States. The lung and liver flukes are endemic in Japan, China and Korea, and the blood fluke in Egypt. However, a considerable number of cases of each variety have been imported to this country, chiefly in immigrants. The writer saw a case in the dispensary here in Richmond in a veteran of the Boer War. This patient contracted the disease in Cairo. There is far more danger to the Western part of the United States from the other fluke infections than on this side, owing to the large number of immigrants from Japan and China where the disease is endemic.

Tape worms are peculiarly interesting on account of their complex biology. They all have a double life cycle. The mature segmented form inhabits the intestines of some animal, usually man. The eggs are produced while in this stage. These eggs have a hard resisting shell which is not soluble in the intestinal juices, but which is readily soluble in the gastric juice. When taken into stomach of another animal the shell of the egg is dissolved and the embryo is liberated. The embryo is possessed of three pairs of hooklets, one central and two lateral pairs. The central pair is for boring, the lateral for tearing and propulsion. By means of these they make their way through the gastro-intestinal walls and invade the muscles and other organs. Here the embryo develops into a cyst from which the larval forms are produced.

Three varieties of tape worm habitually infest the intestine of man in their mature form. These are the *tænia saginata*, the *tænia solium* and the *bothriocephalus latus*; and, according to the animal in which the larval or cysticercus form develops, these worms are commonly called beef tape worm, pork tape worm, and fish tape worm. It is the larvæ that are infectious for man. Infection takes place by eating the imperfectly cooked meat of the animal containing the larvæ. The cyst wall is digested and the liberated larva, or scolex, as it is called in this stage, attaches itself to the intestinal wall by means of its suckers. Reproduction by budding now begins. The first segment is pushed further and further away from the scolex, or head, as others are formed behind it. In this way a long colony, known as tape worm, is formed. Enormous numbers of eggs are pro-

duced by each segment, in which the embryo is formed before it leaves the uterus; and, as a rule, tape worm eggs may be distinguished from the eggs of other parasites by the hooklets of the embryos enclosed in them.

The *tænia saginata* is by far the most common of all the tape worms in man, owing to the prevalence of eating rare beef rather than rare pork or fish. The *tænia solium* and the *bothriocephalus latus* are both extremely rare in the United States.

The *tænia solium* is especially dangerous owing to the frequency with which its segments are regurgitated into the stomach where the shell is dissolved from the eggs, leading to heavy infection with the larval form of the parasite. This larval form of the *tænia solium* was thought to be a distinct species of parasite which was called the *cysticercus cellulosæ*. Infection with it is often fatal on account of the migration of the embryos to the brain and heart where they become encysted and, by pressure, interfere with the functions of these organs.

The *bothriocephalus latus* is of especial interest on account of the frequency with which patients infested with it develop an anemia of a megaloblastic type. As only about half the cases infested develop the anemia, the condition incident to the mere presence of the worm cannot be the *sole* cause of it. On the other hand, those cases which have the anemia are promptly restored to health on expulsion of the worm. Thus it would seem that while the worm is an essential *cause* of the anemia in *these* cases, there must be another factor in the production the nature of which is, at present, totally unknown.

Besides being the usual host for these three varieties of tape worm, man is not infrequently the accidental host for the larval form of the *tænia echinococcus*. This parasite habitually infests canines in its mature form, and sheep in its larval form. Man is infected by handling dogs soiled with material containing the eggs of the parasite and *echinococcus* cyst of the liver develops. After the six-hooked embryo has been liberated by the digestion of its shell in the stomach, it enters the intestine and bores its way through the mucous membrane. Entering the branches of the portal vein, it is carried to the liver. In about four weeks the embryo loses its hooklets and becomes transformed

into a cyst surrounded by a thick wall of inflammatory connective tissue. The true cyst wall, or that formed by the parasite itself, is about from 20 to 50 microns thick, and characteristically lamellated. From its inner surface a large number of protuberances develop, which become converted into little capsules containing the young larvæ. The cyst continues to grow, often weighing more than twenty pounds. Many of the brood capsules become free and form secondary free floating cysts which, on palpation, give rise to a peculiar, jelly-like quiver, the "hydatid thrill." The larvæ of the scolices inside the cyst are provided with a circle of little hooks, many of which become detached; and the presence of these free hooklets in the aspirated fluid is pathognomonic of the disease.

The different species of round worm vary greatly in their pathologic effects, from the insignificant irritation caused by the pin worm to the intense anemia caused by the hook worm. The *trichina spiralis* and the hook worm are the most important pathogenic varieties of this class.

Trichinæ inhabit hogs and rats as their habitual hosts. Man is infected by eating imperfectly cooked pork or raw sausage. When the larvæ reach the intestine of man they develop into small worms, male and female. The males die after fertilizing the females, and the latter burrow through the intestinal wall and deposit embryos, about 1,500 for each female. These are migratory and, within from eight to forty-two days after the infection, begin to reach the striated muscles. After entering the muscle fibres, they form cysts in which develops a spiral, larval form. While the females are in the intestinal wall diarrhœa, abdominal pain, nausea and vomiting are the most prominent symptoms. When the embryos begin to attack the muscles, fever and violent muscular pains are present, especially in the arms and legs. The eye muscles are involved early, and this is characterized by edema of the eyelids, pain on moving the eye and, in some cases, fixation of the eyeball. After the larvæ become encysted the symptoms subside and the patient gradually recovers.

Leucocytosis with marked eosinophilia is a prominent blood change in this disease. The writer was led to the recognition of a sporadic

case in Richmond sometime ago by an examination of the patient's blood, which showed an eosinophilia of 40 per cent.

The hook worm is parasitic for man only, and is probably the most important of all metazoan parasites. Attaching themselves to the mucosa, they apparently act as capillary tubes through which the blood oozes into the lumen of the intestine, at the same time producing a substance which prevents the coagulation of the blood. In this situation they discharge large numbers of eggs so that the diagnosis of the disease is very easy by a simple examination of the unstained feces. The eggs are oval, 35 by 70 microns in size, and very characteristic in appearance with their slightly refractive shell containing the embryo in various stages of development.

In about twenty-four hours after the eggs have been discharged with the feces of an infected person, the embryos emerge from them, and, after undergoing a series of changes, become infective larvæ. Infection takes place in two ways—through the skin or by the mouth. The theory of infection through the skin was first advanced by Loose, in 1898, but was met with incredulity. Since that time experimental evidence has led to its acceptance as probably the most frequent method of infection.

The patient with soil containing the larvæ which penetrates the skin, nearly always attacks the skin of the legs and thighs. The initial lesion is an erythema, followed by a pustular eruption. This condition is known as ground itch. The larvæ continue to penetrate until they reach the veins, then pass with the blood through the heart to the lungs, up the air passages, down the esophagus, through the stomach to the duodenum.

The anemia of this disease is of the chlorotic type, and varies in degree with the number of worms present and the duration of the disease. In one case seen by the writer the hemoglobin was 5, or one-twentieth of normal, and the red blood corpuscles 790,000 per cubic millimeter, giving a color index of .31. This, however, was an extreme case which proved fatal a few days after the examination.

As a rule, the hemoglobin is about 40, and the red blood corpuscles between 2,500,000 and 3,500,000 per cubic millimeter. There is no leucocytosis, as a rule. In cases with good re-

sisting power, eosinophilia is marked; but in exhausted patients with severe infection, the eosinophiles may be below normal. In one case recently examined, which is now recovering, the eosinophiles were as high as 20 per cent. of all the leucocytes. In the fatal case noted, they constituted only 1 per cent.

Besides the anemia, other prominent symptoms of the disease are a dirty, yellow skin, edema of the face and lower extremities, extreme lassitude with a blank, stupid expression, dilated pupils, pronounced, visible pulsation of the carotids, and dyspnea on exertion.

The diagnosis rests on finding the ova of the parasites in the stools. As some cases are very obstinate, an examination of the stools for eggs a few days after appropriate treatment should always be made, and if they are still present the treatment should be repeated at intervals until no eggs can be demonstrated.

A FETUS REMOVED FROM THE ABDOMINAL CAVITY AFTER THREE YEARS' STANDING.*

By E. R. HART, M. D., Suffolk, Va.

Unfortunately, the diagnosis of an unruptured, extra-uterine pregnancy is seldom made, as the symptoms to which it gives rise are usually too slight to cause the patient to consult a physician. When such diagnosis is made, it is usually based upon finding an unilateral tubal tumor in the patient presenting the usual subjective and objective symptoms of early pregnancy, especially if she has been sterile for a number of years, or if a long interval has elapsed since her last pregnancy, with the uterus enlarged and soft and the tubal tumor soft and doughy, and roughly corresponding in size to the supposed duration of pregnancy. But the experience of the majority of operators, after making such a diagnosis, is to find at operation that the tumor is invariably of some other nature. After rupture has taken place the extreme condition of our patient, together with the history and physical findings usually renders the diagnosis unmistakable; however, some cases pass unrecognized and the patient either dies of shock, hemorrhage, sepsis, or the fetus may become digested leaving only a mass filled with blood, as sometimes found at operation.

*Read before the thirty-ninth annual session of the Medical Society of Virginia, held at Richmond, October 20-23, 1908.

When the fetus, however, attains a certain size, it cannot be absorbed in this manner and thus undergoes certain changes; *i. e.*, it may become mummified, skeletized, a lithopedion formation, or an adespere formation.

In mummification the fluid portions of the fetus are gradually absorbed and its internal organs converted into a soft, pulpy mass, which is gradually absorbed; so eventually nothing is left except the skeleton, whose bones are held together by a dry, shriveled skin.

If infection does not occur, the mummified fetus or the membranes surrounding it, or both, become covered by a coating of calcareous material and a stricture results, to which the name lithopedion is generally applied.

A number of such cases are on record. Among the first was that which occurred in the town of Sens in 1601 and was known as lithopedion of Sens.

Likewise, in 1720, Leinzell obtained one from an autopsy upon a woman seventy-four years old, who had carried it for forty-eight years, during which time she had had several children.

A number of cases are now on record in which the lithopedion has been carried from thirty to fifty years as a harmless foreign body, except at labor, when it may give rise to a partial obstruction of the pelvic outlet.

In some cases suppuration of the sac takes place before petrification begins and gradually spreads to the fetus, liquefying all the soft parts, leaving only the bones which sometimes penetrate the walls of the bladder, vagina or intestines and are expelled in this way.

In exceptional cases the fetus becomes converted into a yellowish, greasy mass, supposed to be ammoniacal soap.

The specimen that I have here was one removed from the abdominal cavity of a young woman in 1907, M. R., colored, from North Carolina, age twenty-seven, married six years, no children, father and mother living and healthy; one brother living, no sisters.

Her health had always been good until about four years ago, when the present trouble began, with a sudden sharp pain in the right side in the region of the liver, which lasted for several hours, followed in two or three days by a rise of temperature, which persisted for five weeks, during which time she was very ill. As there

was no suspicion of pregnancy, the diagnosis was not made, and the woman recovered from the attack. In a few weeks she noticed her abdomen was enlarging, and in two or three months began to feel some movements; still not suspecting pregnancy, thought she had a tumor.

The movements and enlargements continued to increase for four or five months, when they stopped, and the abdomen began to recede. She continued in this condition for three years, and when I saw her I found a fairly well nourished and apparently healthy woman, complaining only of weight and gaseous distensions in her abdomen. On examination of the abdomen I found a large tumor occupying the greater portion of the abdominal cavity, extending from about two and a half inches above the symphysis upwards under the lower ribs and apparently attached to the liver, as no line of distinction could be felt on that side. The anterior surface was smooth and hard. Laterally irregularities could be felt, which proved to be the extremities.

Vaginal examination revealed a normal uterus displaced downward, right tube and ovary normal, but in the region of the left tube could be felt a hard mass.

Under the X-ray the mass appeared as a solid, dense tumor with no outline of bones.

Operation. A medium incision was made and enlarged from the ensiform cartilage to the symphysis. The peritoneum was very hard and fibrous and firmly adherent. The upper portion was adherent to the mass for its full extent and had to be dissected off to the lower under surface of the liver, the stomach and the transverse colon, by which it was suspended.

After freeing all adhesions the mass removed proved to be as the specimen shows. On examining the pelvis I found the placenta firmly attached to the ruptured left tube; this with the tube was removed. On closing the peritoneum I found it necessary to remove a strip from either side of the incision about one and a half inches wide, as it appeared extremely hard and devoid of circulation. Otherwise the wound was closed in the usual way and the woman, making an uneventful recovery, left the hospital in about three weeks. The last report of her was received about three weeks ago, and she was in fine condition and performing her daily duties.

SUTURING IN TRACHELORRHAPHY.*

By JAMES W. HENSON, M. D., Richmond, Va.
Professor of Surgical Anatomy and Lecturer on Principles of Surgery, University College of Medicine; Surgeon to the Virginia, and William Byrd Hospitals, and the City Home, Richmond, Va.

In examining the results after trachelorrhaphy by the usual technique, where the sutures are introduced so as to include a little of the mucous membrane at each margin of the denuded surface, we often notice that the wall of the cervix in the line of union is decidedly thinner than elsewhere. Hoping to lessen if not prevent this defect, the writer, after observing the marked improvement in results in perineorrhaphy in the cases in which the sutures were made to avoid the skin and mucous membrane, determined to try this method of suturing in trachelorrhaphy.

This plan has been pursued for some time with the result that in every case the tissues in the line of union are thicker and firmer than after operations by the usual suture method, proving that there is a better approximation of the coats in the cervical wall.

A suture after tying is more or less elliptical in outline depending upon the degree of tension.

In the usual trachelorrhaphy suture the fibro-muscular coat of the cervix lies in the ends of the ellipse.

As the suture is tied the mucous membrane of the vaginal surface of the cervix is drawn toward that of the cervical canal and the fibro-muscular tissue is at the same time folded upon itself and its central part crowded back by this approach of one mucous membrane to the other.

When a suture, which does not engage the mucous membrane, is tied, there is less infolding of tissue because there is less in its grasp and consequently there is better approximation of the central part of the fibro-muscular coat.

As this coat is closely adherent to the mucous membrane, the margin of the latter will be sufficiently approximated for union when the former is brought together by sutures. Thus we get a thicker wall at the line of union.

A CASE OF STRICTURE OF THE FEMALE URETHRA.*

By C. W. ASTROP, M. D., Surry C. H., Va.

The country doctor, more or less busy as the case may be, is seriously handicapped as a pioneer in the purely scientific side of medicine. Far removed from the medical centers, debarred from access to the great libraries and sometimes coming in contact with his nearest colleagues only at intervals, his time is taken up mainly with the practical affairs of his profession.

However, clinical medicine furnishes him with an almost inexhaustible field for the interesting and profitable exercise of his intellectual faculties. Disease in its protean manifestations and kaleidoscopic changes of appearance, perplexing though it may be from a therapeutic standpoint, is, notwithstanding, a never-ending source of interest and reflection. For fear, however, that my paper may become too top-heavy, I will now proceed to that which prompted the writing of this paper, that is the presentation of

A CASE OF STRICTURE OF THE FEMALE URETHRA.

This condition is one of rare occurrence, or considered of little importance if we are to judge by the cursory manner in which it is treated in the text-books, yet my case shows that it may be worthy of our most careful consideration, and may be the matter of the most serious concern to the poor patient.

Mrs. O., aet 63, barren wife, subject of chronic bronchitis; symptoms of irritability of bladder, urine at times normal, at other times loaded with mucus and pus; passing small stones at intervals. Retention of urine supervened, relieved by catheterization, causing apparently exquisite torture, owing to the contraction of the internal sphincter. At times this condition became so aggravated that it became necessary to administer an anesthetic and even then it was with some difficulty that a metallic instrument could be introduced. Without much difficulty, under chloroform, the urethra was dilated 3-4 of an inch; but in spite of this there was a recurrence of the trouble. That the stricture was spasmodic and not organic, as was at one time suspected, is demonstrated by the

*Read before the thirty-ninth annual session of the Medical Society of Virginia, held at Richmond, October 20-23, 1908.

*Read before the Southside Virginia Medical Association, at its twenty-third session, held at Emporia, December 8, 1908.

fact that complete relaxation and incontinence ensued, and continued to the end. An interesting feature of this case, and especially in view of the occasional passage of small gravel is that for several years prior to the advent of the vesical symptoms, the patient had drunk no water but Fonticello Lithia. She did not do this for the relief of any urinary symptoms, for she had none; but her husband was agent for the water and as it did not, on this account, cost much, judging it to be pure, she drank it exclusively. It seemed the irony of fate that the condition above all others which lithia water is supposed to combat and for the relief of which it is so highly vaunted as a cure by the proprietors of the various lithia springs, should be developed during the exclusive administration of this water. The origin of all the symptoms was evidently some surgical affection of the kidney, for which the patient was urged to consult a surgeon, but, persistently refusing, sank into a typhoid state and died a year or more after the advent of the vesical symptoms.

TREATMENT OF INCIPIENT TUBERCULOSIS.*

By WM. H. BRAMBLITT, M. D., Pulaski, Va.

Tuberculosis, or perhaps the term that expresses the virulence and ravages of this fearful malady, may more appropriately be called the "Great White Plague," is today attracting more attention than all other diseases combined. The country seems thoroughly aroused as the result of the efforts that have been made to educate the people and call their attention to the fact that this, only a few years ago considered an incurable disease, is now a disease that yields to appropriate treatment in a great majority of cases, if treated in the early stages.

I can in this case express my views more pointedly and definitely by the relation of a case that came into my hands.

In August two years ago (1906), I was called to Grayson County to see Mrs. A., about thirty years of age, with four children, the youngest about three or four years of age. Mother of healthy parentage with the exception of her father, who when a boy, had what was at that day called "white swelling" of the knee

joint, from which he recovered, with some lameness remaining.

Upon investigation of the case I found she had a temperature, the first evening I saw her, of 101 degrees, F. She had, and had had for several months, a hacking cough attended with expectoration of some mucus and frequently with blood. She had lost flesh very rapidly for two or three months. Her pulse ranged from 90 to 100; appetite very poor and she was very much prostrated. No dullness on percussion over lungs. No physical signs, except, perhaps, a little prolonged expiration.

I arrived at the diagnosis of tuberculosis of the lungs. I then gave directions for her home treatment.

On the south side of her residence was a wide porch. I directed her to put her bed out in that porch and curtain off one or both sides, and have an abundance of air circulating inside the curtains at all times, and to occupy that bed night and day, and in fact to stay out in the open air all the day as well as night.

I also directed her to take good nourishing diet consisting of plain food; especially eggs and good rich milk, the latter, which the blue grass farm upon which she resided, furnished in the greatest abundance.

In the way of medicines I directed her to take two drops of Fowler's solution of arsenic with 10 drops tinct. muriate of iron, three times a day—more as a placebo than for any great benefit I expected her to derive from it. I directed her husband to procure a fever thermometer and to take her temperature twice a day and to furnish me with a record so obtained twice a week, and also to furnish me a statement of the case as to the condition of the digestive functions, her bowels, etc.

These directions were rigidly carried out with but little change from the plan laid out when I first saw her. She commenced to improve at once, and in three months her cough had all disappeared. No cough, no blood expectoration, and she had gained eighteen or twenty pounds in weight, and was cheerful and happy.

It will be observed in this case, that I did not wait for physical signs; that the diagnosis was arrived at from a study of the general condition of the patient, which I think can, in most cases, by a little careful study, be arrived

*Read before the Southwest Virginia Medical Society at its fourteenth semi-annual meeting, held at Bristol, December 3-4, 1908.

at with a great deal of certainty; and as so much depends upon early treatment, it would be better to run the risk of making an erroneous diagnosis than to fail to treat these cases in their incipency.

The careful study of these cases for ten days or two weeks by an experienced physician would almost infallibly lead to a correct diagnosis.

This patient visited me at my office in Pulaski during last summer; the object of her visit was to show me what a wonderful change had taken place in her physique in the last two years. She had gained forty or fifty pounds, and claimed that her health was perfect, and that she had never slept anywhere else than in the porch.

If I have succeeded in interesting the Fellows of this Society of the urgency and importance of an early diagnosis and the promptness and simplicity of the treatment of this terrible disease, my object in presenting this paper will have been accomplished.

Proceedings of Societies, Etc.

The Medical Examining Board of Virginia

Met in Lynchburg, Va., at Hotel Carroll, 8:30 P. M., Dec. 15, 1908. Dr. R. W. Martin, President, presiding, Dr. R. S. Martin, Sec. and Treas., recording. On roll call the following other members were present: Drs. Herbert Old, Norfolk; A. S. Priddy, Marion; R. B. James, Danville; W. W. Wilkinson, Lacrosse; H. U. Stephenson, Toano; E. T. Brady, Abingdon; E. C. Williams, Hot Springs; R. M. Slaughter, Theological Seminary; and W. B. Robinson, Tappahannock.

The minutes of the last meeting were read and adopted. The order of examinations adopted was as follows:

WEDNESDAY, DECEMBER 16, 1908.

From 9 A. M. to 12 M.—Etiology and Diagnosis.

From 12 M. to 3 P. M.—Pathology, Bacteriology and Neurology.

From 4 P. M. to 7 P. M.—Anatomy and Embryology.

THURSDAY, DECEMBER 17, 1908.

From 9 A. M. to 12 M.—Laryngology, Rhinology, Ophthalmology and Otology.

From 12 M. to 3 P. M. Materia Medica and Therapeutics.

From 4 P. M. to 7 P. M. Histology, Physiology and Hygiene.

FRIDAY, DECEMBER 18, 1908.

From 9 A. M. to 12 M.—Obstetrics, Gynecology and Pediatrics.

From 12 M. to 3 P. M. Chemistry, Toxicology and Medical Jurisprudence.

From 4 P. M. to 7 P. M.—Surgery.

Dr. James introduced the following resolution which will be voted on at the next regular meeting of the Board:

Resolved, That the examination papers of a candidate who takes the partial examination shall be graded and marked as passed or failed to pass, according as he makes 75 per cent. or less on such subjects as he may be examined on before graduation. On the final subjects on which he shall be examined after graduation he shall be required to make an average of 75 per cent.

Dr. R. W. Martin, President, appointed the following Committees:

Oral: Drs. Stephenson, Wilkinson and Williams.

Questions: Drs. Old, Priddy and James.

Reciprocity: Drs. James, Williams and Stephenson.

The Reciprocity Committee favorably reported the following applications:

Dr. R. L. Eltinge with Ky. Board.

Dr. A. F. Humphreys with Mich. Board.

Dr. J. B. Earley with Ky. Board.

Dr. J. H. Selby with Md. Board.

Dr. H. M. Tayloe with D. C. Board.

Dr. Ira M. Smith with Md. Homeopathic Board.

Dr. J. K. Insley with Md. Board.

This Board agreed to enter into Reciprocity with the Louisiana Medical Board from this date.

Dr. Old offered the following as an amendment to Dr. Brady's resolution:

Resolved: That by-law No. 4 shall be amended to read as follows: A total average of 75 per cent.—that is 675 points—shall be necessary to license a candidate (he or she having otherwise complied with the law); provided, that in no one Section shall the percentage be less than 50 per cent.; if so, the applicant shall be rejected regardless of the total average.

This amendment is to go into effect at the June examinations of the year 1909.

The committees on Questions and Reciprocity made their reports which were adopted.

Dr. Brady then introduced the following resolution which was adopted:

Resolved: That any member of the Board who fails to have the grades on his subject in the hands of the Secretary within 15 days after examination shall be fined \$10, which amount shall be deducted from his pro-rata at the next meeting he may attend.

It was moved and adopted that the Board meet in Richmond, Va., June 22-23-24-25, 1909. Board adjourned.

The Board met at Dr. Taliaferro's home 9 P. M. Dec. 16th. Present, Drs. R. W. Martin, R. S. Martin, R. W. Slaughter, W. B. Robinson, W. W. Wilkinson, R. B. James, E. T. Brady and Herbert Old.

Dr. Richard Whitehead of the Univ. of Va. made a report of his visit to The Medical Council in Chicago as a representative of the Board which was very instructive. A vote of thanks was extended to Dr. Whitehead.

Dr. R. W. Martin, president, appointed Drs. Slaughter, Old and Brady committee to report as to what changes are necessary in the Medical laws and by-laws of the Board.

The Board adjourned.

R. W. MARTIN, M. D., PRES.

R. S. MARTIN, M. D., SECY-TREAS.

QUESTIONS PRESENTED IN EXAMINATIONS BY SECTIONS, DECEMBER, 1908.

Section on Practice, Etiology and Diagnosis.

Drs. E. T. Brady, Abingdon, Chairman; H. U. Stephenson, Toano, and R. B. James, Danville.

1. What is Chlorosis? Outline treatment, giving prescriptions and hygienic instructions.
2. What is Myalgia? Name most common forms, and briefly outline treatment.
3. What are the primary and secondary manifestations of Syphilis? How treated, and when should treatment begin?
4. Define the terms Splanchnoptosis, Gastropnoxis and Nephropnoxis. How are such cases most benefitted?
5. What may cause Cholecystitis? Give symptoms.
6. What is the cause of Tuberculosis? How communicated? Give prophylactic suggestions.
7. How can chronic Morphinism be recognized? How managed?
8. What are the Exanthemata? Name them.
9. Differentiate between the causation and onset of Lobar, and so-called Lobular Pneumonias.
10. What may result from a dislodged thrombus?

11. What would probably cause (a) Hematuria, (b) Oxaluria?
12. Give symptoms of Acute Anterior Polio-myelitis.

Section on Laryngology, Rhinology, Ophthalmology and Otology.

Drs. A. S. Priddy, Marion, Chairman; E. C. Williams, Hot Springs, and Herbert Old, Norfolk, Examiners.

Laryngology.

1. Define Laryngismus Stridulus, and give its symptoms, prognosis and treatment.
2. Give the symptoms, complications and treatment of Acute Pharyngitis.
3. What two hypertrophic conditions of the nasopharyngeal region are most frequently found in childhood, and which generally exist as complications in the same subject, and what are some of the results of neglect in their treatment; what is the proper treatment for each condition?

Rhinology.

1. Give two or more causes for (a) Watery. (b) Fetid, (c) Bloody Nasal Discharges, and treatment for severe cases of the latter.
2. Give at least three causes for Perforation of Nasal Cartilaginous Septum—its symptoms and treatment.

Ophthalmology.

1. Give the most common varieties of Eye Strain, their causes, symptoms and treatment.
2. Define Keratitis, and give its varieties, causes and treatment.
3. Give a comprehensive definition of Glaucoma, and differentiate it from Cataract, Iritis and Neuralgia.

Otology.

1. Give four causes of Otalgia, and the treatment of each.
2. Name three or more of the most common causes of Deafness, and explain how each produces such an effect, and give proper treatment.

Section on Anatomy and Embryology.

Dr. H. U. Stephenson, Toano, Va., Examiner.

1. Name the bones of the skull.
2. Describe the foramen magnum; what structures are found within it?
3. What muscles are attached to the great trochanter of the femur?
4. Wherein does the female perineum differ from the male perineum?
5. Name the extensor muscles of the foot.
6. What portions of the rectum and bladder are covered with peritoneum?
7. Describe the musculospiral nerve.
8. Give the origin, insertion, blood and nerve supply of the following muscles; sterno-mastoid, internal oblique.
9. Describe the ligaments of the elbow joint.
10. Where is the Gasserian Ganglion situated; name its large branches?
11. How is the true chorion formed?
12. What is the umbilical cord composed of?

Section on Therapeutics.

Dr. W. B. Robinson, Tappahannock, Va., Examiner.

1. Give the therapeutic uses, the dose and the common name of Potassium Bitartrate.
2. What are the possible dangers from the use of Salol in large doses?
3. In what pathologic conditions is Opium useful?
4. Describe the therapeutic uses of Aloes, and state how it differs in effect from Jalap.
5. Give the indications for the therapeutic uses of Nux Vomica or Strychnia.
6. Give the preparations of Phosphorus, and describe their therapeutic uses. State the symptoms of Phosphorus Poisoning and give antidotes.

Section on Materia Medica.

Dr. William W. Wilkinson, La Crosse, Va., Examiner.

1. Name official preparations of Arsenious Acid. State their strength and dose.
2. Acetanilid: (a) state dose; (b) physiological action; (c) symptoms of poisoning.
3. Cocaine: Give source, physiological action, dose.
4. Atropine: State dose, physiological action. Give physiological action of Camphor.
5. State physiological action of Aconite.
6. (a) Write composition of Dover's Powder. (b) What is Basham's Mixture? (c) Saltpetre.

Section on Surgery.

Drs. Saml. Lile, Chairman; E. T. Brady, R. M. Slaughter, Examiners.

1. What is meant by Infection? What by Auto-Infection, and how would you treat such conditions?
2. What is meant by Phlegmonous Inflammation or Cellulitis?
3. What are Hemorrhoids? What causes them, and how treated (give palliative treatment and treatment for radical cure).
4. Give the most frequent dislocation of the elbow joint, giving the positions of the bones involved, how reduced, and treatment until fully cured.
5. What would be the indications for not amputating an arm, fore-arm, or hand when the tissues are badly lacerated?
6. What causes Dry, Moist, Senile and Diabetic Gangrene?
7. Differentiate a Tubercular from a Syphilitic Infection of the Inguinal Glands.
8. Give Definition of a Compound Fracture, and give treatment necessary to all such fractures.

Section on Pathology, Bacteriology and Neurology.

Dr. R. M. Slaughter, Examiner.

1. Name the form of degeneration that occurs in the so-called wasting diseases, and state the organs and the parts thereof most frequently affected.
2. Define the terms (a) hypertrophy, and (b) atrophy, giving examples of each of these conditions.
3. What is a sequestrum, and how formed? What are, and what the functions of (a) osteoblasts, and (c) osteoclasts?

4. Give the pathological nature of (a) the itch (scabies), (b) lupus vulgaris, (c) chancreoid, and (d) erysipelas.
5. Name a tumor of the connective tissue type, two of the epithelial type, one benign, the other malignant, and state to what class of tumors cysts belong.
6. How many and what are the varieties of cirrhosis (sclerosis) of the liver? What is the pathological cause of the condition?

Bacteriology.

1. Describe the preparation and staining of a specimen of blood in the diagnosis of malaria.
2. What peculiarity as regards its staining properties has the tubercle bacillus? Name some other bacilli that have the same peculiarity. Give the bacteriology of bubonic plague.
3. Describe the micro-organism which causes enteric fever.

Neurology.

1. What is tic douloureux? Give treatment of this condition.
2. Give the etiology of acute chorea.
3. Give the treatment of delirium tremens.

Section on Chemistry, Toxicology and Medical**Jurisprudence.**

Dr. R. B. James, Examiner.

Chemistry.

1. What is meant by Spectrum and Spectrum analysis?
2. What is common table-salt? How found in nature? What impurities make it hydroscopic? What is Glauber Salts? How prepared?
3. What differences exist between Sodium Carbonate and Sodium Bicarbonate as regard their physical and chemical properties and common uses?
4. How is silver obtained from its native ores? How is Silver Nitrate prepared? Give its formula, properties, uses and common name?
5. What are Alkaloids? Give general method of preparing them. What are some of their common properties?
6. What are the two ways of naming the Alkaloid Salts, according as they unite with an Oxy-acid or a Halogen Acid? Why would you not add an alkali to solution, to be taken internally, containing an Alkaloid?

Toxicology.

1. What is the poisonous principle in Mushrooms? Give symptoms and treatment of Mushroom poisoning.
2. What is the best antidote to acute Cocaine poisoning?

Medical Jurisprudence.

1. Describe the differences between burns made before and after death.
2. Give the reliable proofs that a child found dead was born alive.
3. Explain fully what is meant by legitimacy.

Section on Physiology, Hygiene and Histology.

Dr. Robert C. Randolph, Boyce, Va., Examiner.

Physiology.

1. In what manner, physiologically, does a largely distended stomach produce death?
2. Name the centers and the nerves which regulate intestinal peristalsis, and describe their action.
3. Describe the muscular and nervous mechanism of defecation.
4. What is Glycogen? From what is it derived? What is it converted into by dilute acids?
5. What is the physiologic function of the Liver?
6. How is the sensation of sound conveyed to the brain?

Hygiene.

1. Define humidity of the atmosphere. Why should a humid atmosphere cause rheumatic or gouty persons increased sensitiveness?
2. What hygienic means should be employed by persons prone to catch cold?
3. How long does a diphtheria patient remain infective? How may it be proved that the infective period has ceased?

Histology.

1. What are the germ layers? Name the five groups of tissues.
2. What structures and organs are comprised in the lymphatic system? Describe diffuse Adenoid tissue and where found.

Section on Obstetrics, Gynecology, Pediatrics.

1. Give the functions of (a) Placenta, (b) Liquor Amnii.
2. Ante-partum examinations, (a) State their importance, (b) of what should they consist?
3. Give the causes of ante-partum hemorrhages.
4. Breech presentation: (a) Diagnosis, (b) Management of first and second stages of the labor.
5. Give reasons for the use and non-use of vaginal douches (a) before labor, (b) after labor and during the puerperium.
6. Give the early diagnosis of Uterine Cancer.
7. Causes of secondary or acquired Amenorrhoea.
8. Gonorrhoeal infection in the female; (a) organs usually affected, (b) mention complications.
9. Acute Broncho-Pneumonia in children: (a) Diagnosis, (b) Treatment.
10. Mention the principal differences between mother's milk and cow's milk.

Alphabetically Arranged List of Applicants for License to Practice Medicine, Surgery, etc., Who Passed Satisfactory Examinations Before the Medical Examining Board of Virginia During its Session, December 15-18, 1908, Held in Lynchburg, Va.

Bell, Frank, E., Richmond, Va., Medical College of Va., 1908.

Byrnes, Chas. M., University of Va., Johns Hopkins University, 1906.

Carey, R. S., Kinsale, Va., University of Maryland, 1908.

Cole, J. E., Fredericksburg, Va., University of Va., 1907.

Conduff, S. A., Laurel Fork, Va., University of the South, 1907.

Conduff, C. E., Willis, Va., Tenn. Medical College, 1908.

Dodd, T. F., Alexandria, Va., Medical College of Va., 1908.

Eltinge, R. L., Baltimore, Md., N. Y. Homeopathic Medical College, 1901.

Edmunds, M. R., National Soldiers' Home, Va., George Washington University, 1906.

Earley, J. B., Somerset, Ky., Illinois Medical College, 1904.

Fleisher, J. A., Meadow Dale, Va., University of Va., 1908.

Humphreys, A. F., University of Virginia, University of Michigan, 1907.

Huddle, L. W., Rural Retreat, Va., Tenn. Medical College, 1907.

Henry, John R., Winston-Salem, N. C., Leonard Medical College, 1908.

Insley, J. K., Tangier, Va., University of Maryland, 1908.

Lord, F. K., Richmond, Va., University College of Medicine, 1908.

Lawrence, C. F., Mt. Airy, N. C., George Washington University, 1908.

Mitchell, A. M., Medico-Chirurgical College of Christ Institute, 1904.

Monsen, M. B., Luray, S. C., Medical College of South Carolina, 1902.

Marsteller, A. A., Cambria, Va., Medical College of Va., 1906.

Price, C. C., Rocky Mt., Va., University College of Medicine, 1896.

Payne, W. C., Flat Run, Va., University of Va., 1907.

Reynolds, J. G., Whittles Depot, Va., Hospital College of Medicine, 1904.

Scott, S. L., Staunton, Va., McHarry Medical College, 1905.

Shelton, R. J., Orchid, Va., University of the South, 1908.

Swetnam, Ford H., Fairfax Station, Va., Georgetown University, 1907.

Smith, Ira M., Newport, Va., Atlantic Medical College, 1907.

Selby, J. Hunter, Warrenton, Va., University of Va., 1907.

Tarter, U. S., Bristol, Tenn.-Va., McHarry Medical College, 1908.

Tayloe, Harry M., Hague, Va., George Washington University, 1908.

West, A. E., Philadelphia, Leonard Medical College, 1908.

Woolford, C. I., Baltimore, Md., Baltimore University, 1898.

Williams, R. Lloyd, New York, Tulane University, 1898.

Williamson, Thomas V., Mt. Jackson, Va., University of Virginia, 1908.

Yate, R. J., Alexandria, Va., George Washington University, 1907.

INSTITUTIONS REPRESENTED BY APPLICANTS WHO CAME BEFORE THE MEDICAL EXAMINING BOARD OF VIRGINIA, FALL SESSION, AT LYNCHBURG, VA. Dec., 15-18, 1908.		Total Number of Applicants from each College.	Total Number of Applicants Licensed from each College.	Total Number of Applicants Rejected from each College.	Partial Examination	Incomplete or Withdraw
Leonard Medical College.....	7	2	5			
Medico Chirur. College, Christ Inst.....	1	1				
Meharry Medical College.....	2	2				
Baltimore Medical College.....	3		3			
New York Homœopathic Medical College.....	1	1				
Medical College of Virginia.....	5	3	2			
Baltimore University.....	1	1				
University of Maryland.....	2	2				
College of Physicians and Surgeons, Boston.....	1		1			
University of Michigan.....	1	1				
Tulane University.....	1	1				
University College Medicine, Richmond.....	2	2				
Northwestern University, Chicago.....	1		1			
University of South.....	6	2	3			1
George Washington University.....	5	4	1			
Georgetown University.....	1	1				
University of Virginia.....	6		1			
Kentucky School of Medicine.....	3		3			
Massachusetts College Osteopathy.....	1		1			
Hospital College of Medicine, Louisville.....	2	1	1			
Medical College South Carolina.....	1	1				
Tennessee Medical College.....	2	2				
University of Tennessee.....	1		1			
Johns Hopkins University.....	1	1				
Physicians and Surgeons, Baltimore.....	1		1			
Atlanta Medical College.....	1	1				
Illinois Medical College.....	1	1				
Non-Graduates.....	30				30	
Totals.....	90	35	24	30	1	

INSTITUTIONS REPRESENTED BY THE APPLICANTS BEFORE THE MEDICAL EXAMINING BOARD OF VIRGINIA, FROM THE ORGANIZATION OF THE BOARD, JANUARY 1, 1885, to DEC., 15 18, 1908.		Total Number from each Institution.	Total Number Licensed First Examination.	Total Number Rejected First Examination.	Licensed Second Examination.	Rejected Second Examination.	Licensed Third Examination.	Rejected Third Examination.	Licensed Fourth Examination.	Rejected Fourth Examination.	Licensed Fifth Examination.	Rejected Fifth Examination.	Rejected Sixth Examination.	Rejected Seventh Examination.	Licensed Eighth Examination.	Incomplete or Withdraw	Partial examination
Total No. before board from organization to Dec. 15-18, 1908.	3669	2027	634	221	131	45	47	8	32	4	5	1	1			62	775
Leonard Medical College.....	7	1	2	1	2												
Medico Chirur. College, Christ Institute.....	1	1													1		
Meharry Medical College.....	2	1															
Baltimore Medical College.....	3	1						2			1						
New York Homœopathic Medical College.....	1	1															
Medical College Virginia.....	5	2	2	1													
Baltimore University.....	1	1															
University of Maryland.....	2	2															
College Physicians and Surgeons, Boston.....	1	1			1												
University of Michigan.....	1	1															
Tulane University.....	1	1															
University College of Medicine, Richmond.....	2	2															
Northwestern University, Chicago.....	1		1														
University of South.....	6	1	1		1	1										1	
George Washington University.....	5	3	1	1													
Georgetown University.....	1	1															
University of Virginia.....	6	3	1	1		1											
Kentucky School of Medicine.....	3		3						1								
Massachusetts College Osteopathy.....	1		1						1								
Hospital College Medicine.....	2		1					1									
Medical College of South Carolina.....	1	1															
Tennessee Medical College.....	2		1	1		1											
University of Tennessee.....	1		1														
Johns Hopkins University.....	1	1															
Physicians and Surgeons, Baltimore.....	1				1												
Atlanta Medical College.....	1	1															
Illinois Medical College.....	1	1															
Non-Graduates taking partial Examination.....																	30
Totals.....	3729	2061	645	226	136	48	52	8	33	5	5	1	1	1	63		805

Nos. of examina- tion papers.	LIST OF INSTITUTIONS Whose Graduates were Rejected by the Medical Examining Board of Va., FALL SESSION, Dec., 15-18, 1908. With Percentage Marks of each.											Total.	Average.
	COLLEGE OF GRADUATION.	YEAR.	Laryng., Rhinol., Ophthalm. & Otolaryg.	Chemistry, Toxicol., & Medical Juris.	Anatomy & Embry- ology.	Physiology, Hygiene & Histology.	Pathology Bacteriolo- gy & Neurology.	Obstetrics, Gynecolo- gy & Pediatrics.	Materia Medica & Therapeutics.	Practice, Etiology & Diagnosis.	Surgery.		
1	Leonard Medical College	1908	75	75	76	75	68	75	79	65	80	668	74
5	Baltimore Medical College	1907	75	80	75	63	60	75	72.5	68	60	628.5	69
7	Leonard Medical College	1908	81	75	82	73	45	70	76.5	68	68	638.5	70
14	Leonard Medical College	1908	72	70	73	69	30	73.5	40	51	55	533.5	59
16	Leonard Medical College	1906	73	50	72	42	10	75	27.5	49	60	458.5	50
17	Leonard Medical College	1906	55	55	51	46	10	72	35	37	60	421	46
18	Medical College Virginia	1908	79	80	56	56	66	77	75.5	79.5	75	644	71
21	College Physicians and Surgeons, Boston	1907	82	85	65	37	45	70	47.5	75	50	556.5	61
25	Northwestern University, Chicago	1908	86	80	45	70	70	79	67.5	65	75	637.5	70
28	George Washington University	1908	89	75	49	66	75	75	82	72	80	663	73
30	Baltimore Medical College	1900	Oral Examination										
36	Kentucky School of Medicine	1908	75	70	65	57	58	75	74	57	65	596	66
46	Kentucky School of Medicine	1908	45	65	40	28	45	75	61.5	20	60	439.5	48
47	University of Virginia	1908	91	80	62	50	45	75	62.5	71	75	611.5	67
48	Mass. Coll. Osteop.	1907	73	85	70	66	56	75	55	56	55	592.5	67
49	Hospital College Medicine	1908	77	75	62	68	48	79	72.5	74	85	640.5	71
69	University of Tennessee	1891	Oral Examination										
74	University of South	1908	56	70	67	56	68	75	60	73	75	600	66
81	Physicians and Surgeons, Baltimore	1901	Oral Examination										
83	Kentucky School of Medicine	1887	Oral Examination										
84	University of South	1903	81	90	68	65	65	72	81	72	70	664	73

Nos. of examination papers.	INSTITUTIONS Whose Graduates were Rejected by the Medical Examining Board of Va., AT REGULAR FALL MEETING, Dec., 15-18, 1908. With Percentage Marks of each. COLLEGE OF GRADUATION.										Total.	Average.
	YEAR.	Hygiene and Med. Jurisprudence.	Chemistry.	Anatomy.	Physiology.	Histology, Pathology, Bacteriology.	Obstetrics and Gynecology.	Maternal Medicine and Therapeutics.	Practice.	Surgery.		
	Baltimore Medical College	1907	75	81	60	60	75	73	79.5	70	573.5	71
	University of South	1907	78	80	69	70	77	70	75	60	644	71
	Medical College Virgin	1908	74	77	62	76	70	77.5	66	60	645.5	71

Book Notices.

Diseases of the Digestive Canal. By DR. PAUL COHNHEIM, Specialist in Diseases of Stomach and Intestines, Berlin. From second German edition. Edited and translated by DUDLEY FULTON, M. D., Lecturer on Medicine, University of Southern California, Los Angeles. Illustrated. J. B. Lippincott Co. Philadelphia and London. 1909. Cloth. 8vo. Pages xxi—373. \$4.00 net.

Seldom do we come across a book that is so direct and practical in its clinical teachings as this one on diseases of the esophagus, stomach and intestines—either in the way of diagnosis or treatment. Theoretic discussions are omitted, and are replaced by the results of observation and experience. Had the author waited only a few months to have brought also

the revelations of the esophagoscope and gastroscope, as recently announced, it would have been a nearly perfect clinical book on the subjects discussed. The plain, simple style of the author in reaching his diagnosis, the thoroughness of his questionings, the interpretations of his findings, etc., all contribute to making this the practical book needed by the practitioner who has to deal with diseases of the parts named in the title. Appended to the text is a short chapter titled "A, B, C of the most important disturbances of the digestive tract," which of course, is a resume of the contents, but put in such form as to be easily remembered and very helpful at the bedside. The proper use of the teachings of this book are to be most unreservedly commended to practitioners.

American Practice of Surgery. Editors: JOSEPH D. BRYANT, M. D., LL. D., and ALBERT H. BUCK, M. D., New York City. Completed in eight volumes. Profusely illustrated. Vol. V. New York. William Wood & Co. 1908. Royal 8vo. 965 pages. Price per volume: extra muslin, \$7.00; brown leather, \$8.00; extra half Levant Morocco, \$9.00.

This great work, to be completed in eight volumes, will long stand as a monument to American surgical literature. It appears as an oversight that neither on the back title, nor on the title page of each volume, the general subjects of its contents are given. It would greatly have aided ready reference to the volume desired to be consulted had such been done. Volume V, now before us, treats of surgery of the head, of the cranial nerves, and of the face. After a section on hairlip and cleft palate, surgery of the eye, of the ear, of the pharynx, larynx and trachea are considered. There are eleven authors named as contributors to this volume, each of whom is distinguished in his special field. There is much to be said for and against such extensive systems. For instance, the first volume of this system was issued in 1906; it will probably be the end of 1910 before Vol. VIII is ready. In the five included years, such is the rapid advance in surgery that it is not improbable that what was fresh and useful in the earlier volumes will have become obsolete, or replaced by advanced teachings, and such is the massiveness of the complete work that revised editions can scarcely be anticipated. Besides, there is much of utility to specialists in some of the volumes that the general operative surgeon will probably never want. Instead of such massive *Systems*, monographs on different subjects would be better to meet the wants of practitioners, for they can be more readily revised in succeeding editions according to demand for works on special subjects.

Text-Book of Diseases of the Nose, Throat and Ear. By FRANCIS R. PACKARD, M. D., Professor of Diseases of Nose and Throat, Philadelphia Polyclinic Hospital and College for Graduates in Medicine, etc. Philadelphia and London. J. B. Lippincott Co. 8vo. 369 pages. Cloth.

The author's reputation for ability in his specialty is well established, and the many who have been students under him will be glad to have his teachings in book form. The

book covers the usual subjects taught in these specialties and shows that much research has been made of literature. We note the reference made to the two cases, reported by Dr. John Dunn, of Richmond, Va., of tic douloureux of reflex nasal origin, relieved by removal of some hypertrophied tissue in one case, and of a septal spur in the other case. The work is systematically arranged for the purposes of a class room text book. Illustrations are abundantly used wherever necessary. The index is excellent—17 double column pages.

Orthopedic Surgery for Practitioners. By HENRY LING TAYLOR, Professor of Orthopedic Surgery, New York Post Graduate Medical School and Hospital. Assisted by CHARLES OGILVY, M. D., and FRED. H. ALBEE, M. D. With 254 illustrations. New York and London. D. Appleton & Co. 1909. 8vo. 503—xxiv pages. Cloth.

Even during the period of an ordinary professional life such marked advances have been made in orthopedics as to command for it a high position as an important specialty in medicine; and so rapid have been these advances that new text-books are in demand, whether for colleges or practitioners. This book will prove specially useful at this time, because of the profusion of illustrations and the good descriptive text concerning practical details. The attractive large face type on a fine grade of paper add much to the pleasure of reading. As the illustrations take up probably two-fifths of the book, there are only about 300 pages of text, which can well be read in the spare hours of two or three days, and then, to make references easy, a good Index is added. It is a book of every day use to general practitioners as well as to specialists in orthopedy.

Editorial.

Local Health Boards and Relation of Profession Thereto.

Those health officers who have been most successful in building up their departments will always testify that no one factor is of more importance in the conduct of a municipal health department than is the cordial co-operation of the local medical profession. In hundreds of ways the health officer is dependent upon the

doctor, and without the doctor's help the efforts of the health officer to arrive at the prevalence of contagious diseases would be doomed to failure, and in fact, his vital statistics in every direction would be deficient, or even useless.

While it is perfectly true that physicians do not report these matters unless they are required to do so by law, still, there is a vast difference between returns which are secured by an unpopular health officer coercing an unwilling and even antagonistic medical profession and those which are secured when there is perfect mutual understanding.

Further than this, the health officer must look to the members of the medical profession in a great measure for the intimate instruction in the fundamental principles of preventative medicine, for which the health department is working. A few words from a physician in whom the family has confidence may serve on the one hand to impress these lessons more forcibly than the impersonal efforts of the health officer can possibly do, or, on the other hand, the words of the same physician can weaken, or even utterly undo, much of the work in which the health officer is engaged.

In Richmond the Health Department and the medical profession are very fortunate in having a splendid basis of mutual understanding, and the Chief Health Officer of Richmond has repeatedly stated that he knows of no factor which has more actively contributed to the successful work of his Department.

We may thus, to some extent, regard each practicing physician as an auxiliary health officer. Occupying such a position, it is manifestly unjust that either city or State should impose a tax on the members of this profession for carrying on their work. Physicians receive no compensation for the reports which they make to the Health Department, and compensation for their cordial support in other matters would be an impossibility. It would, therefore, seem that, from this point of view alone, the State of Virginia should relieve her physicians of the tax for practicing a profession which enables them to render this inestimable service.

Vaccination in Virginia.

Both the Virginia State Board of Health and the Richmond City Board of Health have

issued warnings about the outbreaks of smallpox in portions of Virginia. It becomes almost a crime on the part of individuals in this day to develop such an infection, which is so preventable by vaccination. Both State and cities and counties have made ample provision for the proper supply of vaccination material for those unable to provide it for themselves; and why people will yet subject themselves to the dangers of smallpox we do not understand. With every provision thus made for their protection, we are reminded of the story of the old mule that could be led to the water but could not be made to drink. Health authorities—State and local—cannot do more than they have done to protect people against so dread a scourge as smallpox.

Virginia Epileptic Hospital.

Ten or fifteen years ago, Dr. William F. Drewry, of Petersburg, so presented the reasons for the establishment of a hospital in this State for the care of epileptics as to lead the General Assembly of 1906 to direct the selection of a site in Amherst county, and a board was appointed for the purpose of carrying out the provisions of the law. There has been much unnecessary dilly-dallying about the matter, until finally the Attorney-General of the State was consulted as to whether or not it was mandatory to establish the hospital in the county named. His decision, after full consideration, is that the Legislature decided that the hospital for epileptics be built in Amherst county. Why there should be any further delay in the matter we cannot understand, especially as the necessity for such an institution is growing greater and greater as the years roll by. We most heartily concur with an editorial in our city's morning paper, the *Times-Dispatch*, of January 31st, calling upon the Board appointed for the purpose to take prompt steps to see that the law is carried out. Such is the nature of their trouble that epileptics should not be placed in hospitals for mental diseases, nor in locations where the depressing effects of the one class of diseases can affect, by association, those afflicted with the other class of patients. It would seem an easy matter to select a proper site for an epileptic hospital or colony in the county named, suitably near a railroad and yet sufficiently remote from Lynchburg or Char-

lottesville or other city to restrain patients from improper visitations of bustling communities, and yet easily accessible by friends of the inmates.

It has oftentimes been shown that home treatment of epileptics is unsatisfactory, and that the attempt to take proper care of them at home is a menace to the healthy. Besides, proper care for such at home is a severe strain upon those who are in charge, and prevents the wage earner from attending to those duties necessary for the maintenance of others in the family. And now that the State has come forward to offer relief in this direction, there is no excuse for those in charge of the matter in not going energetically to work to establish the suitable home or hospital or colony provided for by law.

Catawba Sanatorium for the Tuberculous.

The Virginia State Board of Health has selected the site of the Red Sulphur Springs, Roanoke County, Va., as that for the establishment of a State Sanatorium for consumptives, etc., in the earlier stages of the disease. A weekly minimum charge of \$5 each is to be made of patients. Dr. Robert F. Williams, who some years ago moved from Richmond city to El Paso, Texas, is to assume charge about March 1st—as soon as the buildings can be properly arranged for the reception of patients. The selection of site and of the medical officer in charge is excellent, and we trust it will not be long before good reports will be forthcoming. While in El Paso, since 1904, Dr. Williams has made for himself a very decided reputation in the diagnosis and treatment of tuberculous conditions.

The Isle of Wight Medical Association

Was organized at Isle of Wight, Va., January 4, 1909. The following officers were elected for the first year: President, Dr. John S. Marshall, of Smithfield; vice-president, Dr. Gavin Rawls, Carrsville; secretary and treasurer, Dr. R. Lee Seward, Isle of Wight.

Dr. S. B. Angle was elected leader of subject for discussion at the first regular meeting to be held at the office of the secretary on April 7th, and he was granted the privilege of selecting his own subject.

The Southside Virginia Medical Association

Will hold its next meeting at Lawrenceville,

March 9th. These meetings have grown in favor, so that during the past few years especially the program has been attracting men of prominence from other sections of the State as well as from the surrounding membership territory. The secretary, Dr. E. F. Reese, of Courtland, Va., should be promptly notified as to the titles of such papers as are to be read at the coming meeting, so that the official program may be issued complete.

Dr. Junius F. Lynch, of Norfolk, Va.,

Has been appointed by Governor Swanson to position as Surgeon-General, with rank as Lieutenant-Colonel, of the Virginia Militia.

Colonel Lynch was formerly Battery Surgeon, with rank as First Lieutenant, to the Norfolk Light Artillery Blues, and upon formation of the State military force into a brigade, he was appointed by General Vaughan as his Brigade Surgeon, with rank as Major. Popular alike with members of the medical profession and the soldiery, this last promotion will prove a source of gratification to his many friends.

Dr. E. H. Sholl, Birmingham, Ala.,

Is a Pennsylvanian by birth. In 1853, he graduated from Princeton College in the class with the late distinguished Dr. Joseph Jones, of New Orleans. In 1856 he located at Clinton, Ala., and on the outbreak of the Confederate War, enlisted as a Confederate soldier, and in 1862 was commissioned an Assistant Surgeon. In 1883, he located in Birmingham as a practitioner, and soon developed a reputation known far and wide. He has received the honors of the Alabama profession, which he well earned and carried—being President of the Medical Association of that State 1888. In December, 1908, he retired as Chairman of the State Board of Censors, and Committee of Public Health after twenty-five years of faithful services. This was the occasion of the presentation to him of a loving cup by the Birmingham Medical Society. We have known him as a personal friend and as a continuous patron of this journal for many years, and we feel that this brief record should be made of his life and works, and of the special high esteem in which he is held by the profession of the great State of Alabama.

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Original Communications.

SOME FURTHER APPLICATIONS OF THE FOWLER-MURPHY METHOD.*

By SOUTHGATE LEIGH, M. D., Norfolk, Va.
Surgeon Sarah Leigh Hospital, Etc.

At the last meeting of this Society, one year ago, I read a brief paper on the modern treatment of diffuse suppurative peritonitis, and gave in detail a short description of the Fowler-Murphy method of position and salt solution by the bowel. My experience during the past year confirms and strengthens the claims which I then made for the wonderful efficiency of the treatment.

I would like to lay more stress on the combined elevated and side position in appendicitis cases, which position I then advocated, but referred to only briefly. I make use of it with good effect at every opportunity, and believe it to be a marked improvement over the method of elevation in the dorsal position.

So far, in those cases starting from appendicitis, in which the general peritoneal cavity has become infected, I have found it unnecessary to make more than one incision, over the site of the appendix. Through this opening large, soft rubber tubes are inserted, one passing upwards under the liver, another downward to the pelvis, and a third backwards, and sometimes a fourth towards the middle line. Each tube has several perforations on the sides. In addition I frequently put in a gauze packing to fill any old suppurating cavity which may be found around the appendix site. Small gauze wicks are inserted into the tubes. The wound is closed firmly, and superficially packed to prevent protrusion of the intestines. As soon as the patient has safely recovered from the an-

esthetic, the head is sufficiently elevated to make all fluids in the abdominal cavity gravitate towards the pelvis, and the patient is *turned* on the right side, so as to make the outer openings of the tubes low enough to drain both the pelvic and abdominal cavities. To my mind, this *right side position* is almost as important as the elevation. Without it drainage from the pelvis must be uphill, and it must be more difficult to prevent a spread of the infection throughout the whole of the pelvis. We know that the pelvic peritoneum does not absorb so readily as the abdominal, and yet the more the pus collects there, the stronger are the adhesions which are left, and the more danger there must be of the formation of other pockets of pus.

I have yet to see a single case in which the side position did not materially aid in the drainage. A board put across the foot of the bed for feet to rest against will assist in keeping the patient in position. The patient's skin has to be fortified against pressure effects by alcohol, zinc oxide and other hardening remedies.

As its name implies, this paper is intended especially to refer to other conditions beside appendicitis, in which it is proper to use the position treatment, and also if need be, the salt solution by the bowel. As a preventive means, elevation of the head of the bed has been used by the writer in many different kinds of cases.

In operative work about the abdomen or pelvis, where there is the slightest danger of sepsis, elevation of the head of the bed will make one feel much safer. Formerly I hesitated to curette the uterus where there was much endometritis, if a laparotomy was to be done at the same sitting, fearing that some sepsis might pass from the interior of the uterus to wounds which might be made from above. Now, I feel safe to do the double operation in almost any case, because I know that if any infection

*Read before the thirty-ninth annual session of the Medical Society of Virginia, held at Richmond, October 20-23, 1908.

does exist, it will be kept low down in the pelvis where it can do but little harm.

In stomach or intestinal work, where we can never feel absolutely safe about slight infection from the mucous surfaces, elevation is a safeguard. In bad cases I make a counter opening below, insert tube drainage, and use the continuous saline by the bowel.

In all peritonitis cases elevation is a help and a safeguard.

In puerperal infection, it is of special importance and does great good. The uterine cavity drains better, and septic fluids in the pelvis are kept from spreading. The usual treatment by intra-uterine douches, ice-bags and free moving of the bowels is greatly aided by the elevation of the head of the bed. Where pus forms and drainage is resorted to, the method is even more helpful, and the salt solution by the bowel will augment the good effects.

To my mind, this new method of treatment should be especially helpful to the country practitioner who is so often handicapped by difficulties and disadvantages which his city colleagues can hardly appreciate. In the question of appendicitis alone a great burden is removed from his shoulders. We must all admit nowadays, that if a patient has a well-defined attack of appendicitis, the proper treatment is operation without delay, *provided the operation can be done with skill and with the best facilities*. It is not always possible, however, to rush the patient off to a hospital on the first appearance of trouble. And yet if there is any delay the physician must feel much anxiety, fearing that infection may spread more or less extensively and jeopardize the patient's life. In these cases of doubt and necessary delay, the patient should be elevated and put on the right side, and kept there continuously until the attack clears up or until taken to the hospital. In this position sepsis, if it exists, is localized, kept more or less from spreading, and if the patient comes to the operating table the treatment is much simplified and much less dangerous.

Such a case should be given nothing by mouth, the bowels should be emptied, and if the case is at all severe, continuous salt solution given by the rectum. Simple nourishment, such as the predigested liquid foods, may be used with the saline.

After abdominal operations, and in all cases of inflammatory conditions of the abdomen or pelvis, the elevated position is most comfortable to the patient. This is especially true where there is tympanites. My experience is that it rarely effects the heart's action badly. I have seen two or three instances where the patients were quite weak from other causes, and I felt it safer to temporarily lower the bed.

In the transportation of appendicitis and similar cases where position is a safeguard, I must again lay stress upon the necessity of propping the patients up, in appendicitis keeping them also on the right side. The jolting of wagons, trains and ambulances may greatly increase the gravity of the cases unless this precaution be taken. The specially constructed stretcher with elevating attachment, mentioned by me in the former paper, has been in constant use, and with good results.

In using the continuous salt solution by the bowel, I still employ a glass infusion bottle, raising it only high enough to produce the necessary flow. The solution is kept warm by hot-water bags. The tube is compressed so as to make the fluid run by drops at least a drop a second. A medium size soft catheter carries it into the bowel. In ordinary cases I stop the flow for one hour out of every four. If the case has been drained by tubes or gauze the salt solution may be used as freely as the bowel will absorb it. If, however, there is no drainage, I doubt the advisability of the free use of the solution. In drainage cases we note that the drainage from the tubes is at times very free, and almost colorless, showing that much salt solution is absorbed by the blood vessels, and that it is freely thrown off by the serous membrane. In closed operative cases, or in non-operative cases, where the treatment is used, I believe it is safer to use the salt solution only in reduced amounts. Otherwise there is some danger of the fluid accumulating in the peritoneal cavity.

It is hardly necessary to go more into detail in the discussion of this most interesting subject. Many of you have used the treatment, and know as much about it as the writer; some of you doubtless know more. To those who have not employed it, I would commend the method most strongly. When once started with

it, you will do as I have done, and extend its usefulness to embrace more and more of your cases. So far the method has been almost entirely in the hands of the surgeon in hospital practice. It should be used largely by the general practitioner, both to prevent complications, and to lessen the severity of impending inflammatory and suppurative conditions.

For the "elevation" part of the treatment no apparatus is needed, the head of the bed being raised by a chair or table, and when indicated, the patient kept on the right side by pillows. In the hospital, where the treatment is so constantly being used, the rack described in my former paper is a convenience.

Where it is desirable to use also the "rectal infusion" all that is required is a fountain syringe, soft catheter or rectal tube, and hot water bags or bottles. The graduated infusion bottle is a convenience, simply because with it the nurse has less trouble in watching the rapidity with which the fluid is running. The salt solution is used in a strength of a teaspoonful and a half to the quart of warm water.

Our profession during the past few years has been reaching out more and more for good old common-sense methods of treatment. None appeals to me more strongly than the Fowler-Murphy treatment, and none deserves to be more generally adopted.

SOME POINTS IN MORBID PSYCHOLOGY.*

By FREDERICK PETERSON, M. D., New York, N. Y.
Professor of Psychiatry, Columbia University.

(Concluded From Last Issue.)

Now let me turn from dementia præcox, a further consideration of which without clinical demonstration, can only be a tax to you, to a consideration of *paranoid delusions*. You have doubtless noticed in the classification I have given you the rather frequent term paranoid, paranoid dementia præcox, paranoid conditions and paranoia. We classify delusions into paranoid, grandiose, depressed and hypochondriacal with some subdivisions under these. But the paranoid are the most interesting. The mildest of these are the so-called derogatory ideas which may concern the individual's physical, mental,

sexual or legal relations. These are very common, and are found among psychopaths, feeble-minded, hysterics, epileptics, and ordinary paranoiacs. Such patients believe themselves to be everywhere looked down upon, badly used, neglected, snubbed, displaced, unrecognized. A second and more important group of paranoid delusions is that of the so-called delusions of reference. The patient refers the words and looks of others, as well as speeches, gestures, and newspaper articles, not at all intended for him, to himself. These delusions of reference are typical of beginning paranoia, of paranoid dementia præcox, and other paranoid conditions, such as acute alcoholism, and drug psychoses and some epileptic states. The delusion of being watched or observed is akin to these delusions of reference. But the so-called persecutory ideas are the most important among the paranoid delusions. They are found in many forms of insanity at times, such as dementia præcox, acute and chronic alcoholism, senile dementia, general paresis, and in epileptic and hysterical insanities, but they form the cardinal symptom of true paranoia. They are apt to be fleeting, transitory, unsystematized in all the other psychoses, but in the true paranoia they are fixed, systematized and highly elaborated. Persecutory ideas include all sorts of delusions of being followed, conspired against, persecuted by electricity, the telephone and vapors, of being chloroformed, hyponotized, poisoned, incriminated, defrauded, attacked and ruined. The persecutory delusions of other psychoses are like a newspaper sketch, but those of paranoias are like a romance or three-volume novel. Paranoia is a progressive psychosis founded on a hereditary basis, and characterized by an early hypochondriacal stage, followed by a stage of elaborated delusions of persecution which are later transformed into systematized delusions of grandeur. Hallucinations, especially of hearing, are often present, but the cardinal symptom is a fixed and elaborated delusional system.

Now this psychosis has much interest for the general practitioner and indeed for everyone. To the rudimentary or undeveloped types of paranoia belong many queer and eccentric individuals whom we call "cranks" and whom the Italians call "mattoids." Under paranoia we may rank many curious and interesting personalities, such as the litigationists, pseudo-in-

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ventors, half-baked reformers, founders of strange and new religions, false prophets, and some of the religious healers often exploited by the newspapers. Many paranoiacs are distinguished in sacred and profane literature, the numerous false prophets or Mahdis of the desert, several of whom are described in Irving's *Life of Mahomet*; Johanna Southcott, John of Leyden, John Thom of Canterbury, Guiteau, and possibly John Brown. Benvenuto Cellini, who immortalized himself in his autobiography, has been placed in this catalogue.

I cannot better illustrate this type of insanity than by submitting to you the autobiography of a paranoiac who was for years in the Poughkeepsie Asylum where I was stationed for several years. He was homicidal, and also a man of unusual mental powers, as many such patients are. He was a good Latin and German scholar, and he learned Welsh from an attendant while in the asylum. This beautifully written manuscript of 400 pages is a remarkable dissection of his mind, as well as a most excellent description of the progressive elaboration of his psychosis. It also possesses great literary merit. He depicts perfectly the three periods of paranoia, that of hypochondriasis or subjective analysis, that of persecution or delusional explication, and that of grandeur or transformation of personality. He called the book "*The Piling of Tophet*" because of the sufferings he had to undergo. To show his own insight into his condition, which by the way, is not infrequent in insanity, he says in his preface.

"This work is given to the public as a lunatic's defense of his position." And again in the introduction:

"I am not only a lunatic, but one of the class of lunatics having a controversy with the world in general; in other words, possessed with a monomania or crazy one-sidedly or on a single subject."

Monomania was the old designation of paranoia. The following extracts, taken here and there in the early chapters, describe the hypochondrical or subjective analytic period very well.

"I was always a shy, retiring child, one of the sad and silent sort from the first." "I remember having at times impressions which must be identical with what I have lately heard others speak of as 'double memory.' The feel-

ing would all at once creep over me that the very thing I was present with, my ideas and perceptions at that time had happened to me once before in just the same sequence and arrangement. I have heard this explained as due to a lack of simultaneity in the action of the two lobes of the brain, the tardy one remembering what had already passed through the other. My own theory was different. I only went so far as to look at it as a mistaken quality in the perception, an erroneous attaching of the nature of the act of remembering to what was really the act of thinking in the present."

"I was very early in life an observer of my own mental peculiarities to a degree which I think must be a very rare exception. If I could compound a boy of my own I should try to improve on the model I remember to have exhibited in myself."

During adolescence he had a fever and says: "In that transitory strength given by the fever coursing through my veins, I now saw the man I ought to have become rising up like a shadowy phantom in judgment on the wreck which I really was. I felt my deficiencies most keenly every time I met a human being face to face. I strongly disliked many things I noticed in the manner and words of some I met. I was terribly alert and sensitive to all kinds of snubs and sneers, and oblique remarks in general."

"I was being carried into a state of secret enmity to mankind in general by the prevailing tenor of my brooding meditations. I was in such a tower state of morbid sensitiveness that a slight tinge of impertinence, brusqueness, a fancied contemptuousness in the manner of those I met, put me on the rack at once. Such was my mental state on the eve of my being overtaken by a more marvelously awful fate than ever fell to the lot of man. It became evident to me that I was shearing my own thoughts given expression to by foreign wills and voices."

"An English physician was the first to form a perfect communication with the inducted brain and he had drawn off my entire memory back to childhood, and delivered it verbally in the presence of reporters who had taken it down. It was stated that the record was preserved in a number of thick volumes. After the whole earth had become permeated with the magnetism of my head, it would be felt as long as I lived, and the instant of my death would

thus be signalled all over the globe, and would be noted and used by all nations as a new era from which to reckon time."

As the delusions burgeoned one from the other and grew more elaborate and systematized he wrote toward the close of his stay at the asylum: "The signs are too many and too evident to permit me to doubt that my destiny is bound up with the religion of the world."

The rest of the book is given up to psychological and religious discussion of great interest from our standpoint. He had gradually become a prophet, and the expounder and propagator of a new religion.

Even from these brief extracts you are enabled to recognize the three stages or cycles of paranoia, to see how the hypochondrical self-analysis grew into persecutory explication, and this into a transformation of personality. The extraordinary persecution leads by a logical process to the idea that he must be an extraordinary being. These extracts show also the wonderful elaboration of the delusional system, which is the diagnostic feature.

Aside from the four great types of real acquired insanity that I have referred to—manic-depressive insanity, dementia præcox, general paresis and paranoia—there is a group of *congenital* mental disorders with which the general practitioner is constantly brought into contact. I do not call attention simply to the cases of idiocy, imbecility and feeble-mindedness with which you are bound to be familiar, but to a peculiar class just above the feeble-minded, that we often call superior degenerates. This term comprises all those borderland cases that show from earliest childhood a deviation from the normal type, that present a disharmony or lack of equilibrium among their mental faculties. They are disequilibrates. To this group should be added doubtless the rudimentary paranoiacs already mentioned. But the class is far larger than this. These cases are found everywhere in our social organizations. The disequilibrium may show itself in unusual talents associated with great weakness of one kind or another. We meet with it constantly in literature, art, politics and religion and the disequilibrates help to fill our prisons, hospital and asylums. The superior degenerates may be relegated to four groups, viz., constitutional depression, impulsive mental disorder, sexual psychopathy and congenital neurasthenia.

Patients with constitutional depression are born incurable pessimists. They have no joy in life, are full of vague apprehensions, hypochondriacal or derogatory ideas, toy with thoughts of suicide, are easily fatigued and exhausted, and at the same time are generally intellectual and even talented.

The impulsive class embraces all those cases who with intact intelligence, emotions and memory, become subject to imperative fears or phobias, imperative ideas, impulses to action. These force themselves upon the consciousness, despite every effort of the will to override or abate them. Such patients have, what the French call "delirium with consciousness." Among the familiar types are agoraphobia, claustrophobia, the doubting folly, coprolalia, kleptomania, pyromania and the like. To the sexual psychopathies belong the various sexual perversions.

Constitutional or congenital neurasthenia is chiefly manifested in a marked exhaustibility of the nervous system. Throughout life the patient presents the varying symptoms of ordinary neurasthenia with strong ego-centric and often hypochondrical tendencies.

An important point to be borne in mind in reference to these disequilibrates is that so large a proportion are susceptible to alcohol, that very small quantities of alcohol are apt to produce marked toxic effects; and this leads me to another branch of our theme that is important to the general practitioner, viz., pathological drunkenness. It would be a little absurd to say that there is such a thing as *normal* drunkenness. Let us rather call it ordinary drunkenness. You are aware that ordinary intoxication is not considered in this country an excuse for crime. Crimes committed by intoxicated persons are expiated in the same way as crimes committed by sane criminals. But among the alcoholic psychoses, such as delirium tremens, acute hallucinosis, the Korsakoff or polyneuritic psychosis, chronic alcoholic insanity, and alcoholic paranoia, we find the state of pathological drunkenness included in some of the Continental countries. Very little, if anything, has been written about pathological drunkenness in this country, but abroad it has assumed a considerable forensic importance.

Now, pathological drunkenness is the type which is found among the superior degenerates

just described, as well as among many feeble-minded, imbecile, epileptic, hysteric, neurasthenic, paralytic, and senile patients. It is characterized by peculiar blind motor explosions or impulses to action or by deep emotional depression simulating melancholia, or by strong maniacal outbursts. These conditions are of short duration and are usually followed by deep sleep and more or less amnesia. These symptoms in themselves are diagnostic of the disorder, but additional diagnostic evidence is afforded by pupillary paralysis, and if necessary by subsequent experiment upon the patient as to alcoholic intolerance. That is, the effects of small quantities of disguised alcohol administered to the patient, or prisoner, as the case may be, are carefully observed and noted.

I should like before closing, to say a few words about the treatment of insanity in general. Of course prophylaxis is a phase that should be constantly before us. The general practitioner has a rare opportunity to spread about him the many facts that bear on this. He can do much to educate the public in regard to the evils of alcohol and the diffusion of syphilis. He is early brought into close relations with degenerate stocks, and may direct the bringing up of nervous children, lay out for them a map of life, that should comprise the most careful physical rather than mental education and development. He should interest himself not only in prophylaxis, but in the care of patients with insanity before their admission to hospitals, in the conditions of the hospitals and the methods of treatment carried on there, and in the after care of the convalescent and recovered insane.

Owing partly to the prison-like plan on which the older asylums were built, and partly to the complicated judicial procedures necessary for the commitment of patients, there still exists among the people an ancient legacy of feeling about an asylum, and they pass it as they do a prison or a cemetery, with dread and mistrust. Out of this, they must be educated. Though we exchanged the word asylum for the word hospital, we have not yet succeeded in instilling into the minds of the public that the insane are sick. They must learn that insanity is an illness, a preventable and curable one. When this is once learned they will never again permit the acutely insane

to be taken to jails and station houses, as they are at the present time frequently all over the United States, pending commitment to a hospital for the insane. They will provide psychopathic hospitals in all our larger cities, or pavilions in connection with general hospitals (as at Bellevue Hospital in New York, Kings County Hospital, Brooklyn, and the General Hospital in Albany and the newly planned psychopathic department of Johns Hopkins Hospital), to which all emergency cases of insanity can be taken for observation and treatment before transfer to hospitals for the insane. The period of detention in such general hospitals or psychopathic hospitals should be at least ten days, instead of five days, and without any magistrate's or judge's order whatever. This is a purely medical and not a legal matter. It is a question for a board of health, not the courts, to regulate. It should fall altogether under the rules of quarantine. An insane person is sick and is a menace to himself and the public while thus sick. If we can restrain a person of his liberty without commitment papers when he has diphtheria and other contagious or infectious diseases, why have recourse to a judicial proceeding in emergency cases of insanity? If physicians unite in demanding the recognition of insanity as a disease this point will be gained. Of course for longer stays in hospitals and retreats for the insane a regular form of commitment is necessary for the protection of the sane. But chartered general hospitals should be permitted to receive and treat cases of insanity for whatever length of time is expedient and all hospitals and retreats for the insane should be permitted to receive, on the recommendation of any physician or relative, emergency cases of insanity for a ten-day period for observation and treatment pending commitment.

The cardinal principles of the treatment of insanity are isolation and psychotherapy. Patients may be isolated in their own homes in acute conditions, but acute cases requiring bed treatment are relatively few. The vast majority of cases of insanity are rather sub-acute, insidious, chronic in their onset. For these isolation means removal from home and family surroundings, either to hospitals and retreats or if better for the patient, to suitable sanatoria, resorts, hotels, rest-houses, country homes,

etc. Sometimes travel and change of scene are advisable. Under the heading psychotherapy are included not only the influence of sane companionship and conversation with physicians and nurses, but all sorts of exercises and occupations. It is an axiom with the psychiatrist that nothing is better in the way of treatment for the disordered mind than physical employment, which improves nutrition, acts as a safety-valve for the escape of surplus energy, distracts the attention and engages the interest of the patient. While recreations and occupations for patients have been multiplied and improved upon to a great degree in the public hospitals, this is still a form of psychotherapy that is far from sufficiently developed. It is probably the most important form of therapy for the vast majority of the patients, yet it plays a very small part, after all, in hospital regime. Each hospital should have several employees whose sole duty should consist in keeping patients occupied in various recreative exercises, industries, and handicrafts: The exercise and occupation cure nowadays so extensively applied to various neurosis both here and abroad, as at the Craig Colony, at Dr. Hall's place at Marblehead, Mass., and at Dr. Sharp's at Katonah, New York, should be carried out quite as elaborately and really with more reason, at every hospital for the insane. Unfortunately this is little done. It is better done in the public than in private asylums, but even here it is inadequate. The habit of keeping only a boarding house for the insane is a hard one to break. The doctors in charge of private retreats are not wholly responsible for the fact that they do so little for their patients beyond feeding, housing and guarding them. It is partly due to long-established custom, partly to therapeutic pessimism and partly to the stand taken by the patient's relatives who are not educated to the occupation idea. When you next visit an asylum, public or private, you will be able to judge of the progressiveness of the institution by inquiring into the kind of medical histories taken, by looking in at the laboratory, and above all, by observing what the patients themselves are doing.

In closing I should like to recommend to such of you as have not already read it a book recently published by MacMillans called "A Mind that Found Itself" by Clifford W. Beers,

a young man who for three years was an inmate of both public and private hospitals for the insane in Connecticut. He gives a very clear, convincing and withal temperate description of some of the defects in many of our institutions for the insane, defects that are, it may be stated, chiefly due to legislative parsimony in regard to public institutions, and not to the medical officials who are in general a high-minded and noble class of men working toward good ends however hampered by the stupidity, ignorance and false economy of politicians. Furthermore, in his remarkable book, Mr. Beers points out the remedies for these defects.

INTESTINAL OBSTRUCTION.*

By EDWARD A. BALLOCH, M. D., Washington, D. C.

In trying to find a subject which should be at the same time of interest to the medical man and to the one surgically inclined, it seemed to me that the one I have chosen offered the greatest possibilities. To the physician it is of interest because he is the first one to see the patient and because of its causation, often obscure and its diagnosis, frequently doubtful. To the surgeon it is of interest because of the serious or fatal consequences of neglect and because of the means he has to offer for its relief.

The term ileus is the one generally used to cover all classes of obstruction. Two types of ileus are recognized, differing essentially in their causation and manner of treatment, viz.: the dynamic and the mechanical. By dynamic ileus is meant that form which is due to paralysis following the reduction of a hernia, handling of mesentery, and that which accompanies peritonitis. It is not so serious as the other form, and often yields to purely medical treatment. It is constantly in the mind of the surgeon, because, as post-operative ileus, it is an occasional sequence of operations. It has been the lot of every surgeon of experience, after an apparently trivial abdominal operation, to have his patient die from absolute paralysis of the bowel, which refuses to yield to any treatment. One case of this character is always vividly before me. The operation was one upon the uterus, of not very great severity, and free from complications. After the operation the bowels absolutely refused to do

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their work. The pulse and temperature were not of a nature to suggest peritonitis. After various ineffectual efforts to get the bowels to move, the abdomen was reopened on the fourth day, under the impression that there might be some band or adhesion causing the trouble. The peritoneum was absolutely free from any trace of inflammation, and there were no adhesions, bands or other mechanical causes of obstruction. The intestines, however, were entirely empty, and were bunched up into a mass which could be gathered up in the two hands. The patient died. This case made a deep and lasting impression upon me, as careful consideration revealed nothing which had been done or left undone to lead to so unfortunate a termination.

It was an experience of a similar nature that led Craig, of Boston, to advocate the use of eserine salicylate as a preventive of this complication. This drug has the property of stimulating intestinal peristalsis, and Craig uses it as a routine measure, in the following manner: As soon as the abdomen is opened the intestines are inspected to see that there is no mechanical obstruction. If all is clear 1-40 grain of eserine salicylate is given subcutaneously. This observer claims perfect results from this method of treatment, but his results have not been borne out in their entirety by other operators. I have used the drug, but not as a routine measure. In some cases it has seemed to me to depress the action of the heart to an alarming degree.

Another type of this form of ileus is acute dilatation of the stomach, a condition which, lately, has excited much interest among surgeons. Some years ago, before this condition was understood, I operated upon a young married woman for gall-stones. The operation was very simple, and the gall-stones easily removed. After the operation the patient began to vomit. This was attributed to the anesthetic, and it was expected that it would pass off in a few days. Instead of this it got worse and worse and, finally, the patient died from exhaustion on the third day after operation. Had acute dilatation of the stomach been as well understood then as now, I am confident that this life could have been saved. Persistent vomiting is the great characteristic of this condition. It is met with in non-surgical

cases also. In fact, while this paper was in course of preparation, I was asked to see in consultation a young woman, who, after a heavy meal, began to vomit and to have severe abdominal pain. Her physician had given her a cathartic which had not acted. Afterward he had tried repeated enemias in the effort to get the bowels to move. I saw her on the second day, and found her with pain, vomiting and an abdomen that was not in the least degree tympanitic. The diagnosis of obstruction high up was not hard to make, and I gave it as my opinion that she was suffering from acute dilatation of the stomach. She recovered promptly under the proper method of treatment for this condition, which is lavage, followed by more lavage, until the vomiting stops, and the stomach resumes its normal dimensions and functions. In this particular case the stomach was washed out as often as once an hour with a perfectly successful result. The stomach tube serves to drain from the stomach the quantities of fluid that accumulate, in some cases to be measured by the gallon. In many operative cases it is my custom to have the stomach washed out after operation, and I believe that this procedure adds to the comfort of the patient. After lavage two ounces of castor oil may be left in the stomach.

Coming now to the consideration of the obstructive form of ileus, the first thing that strikes the observer is that it is of not uncommon occurrence. Indeed, when one recalls the many things that lead to obstruction, the wonder is not that we see so many cases, but that we do not see more. Let us consider for a moment some of the causes that have been known to lead to obstruction. Among them are hernia, not only through the ordinary openings in the abdominal wall, but also through the foramen of Winslow, slits in the mesentery, etc. Then there are bands, from old peritonitis; various abdominal growths; tuberculosis; cancer; syphilis, in the form of stricture; foreign bodies; gall-stones; enteroliths and fecal masses; strangulation by volvulus and intussusception; obstruction by the tip of the appendix or a Meckel's diverticulum, etc.

What happens when the intestines become obstructed? The usual order of events is constipation, for which the patient usually doses

himself, needless to say ineffectually. Then nausea and vomiting appear, with pain. A physician is sent for, and his first procedure is to administer his favorite cathartic, which he has never known to fail. No result except more vomiting, which, by this time has changed from mucus and stomach-contents filled with bile, to a foul-smelling, dark fluid. Meanwhile the pulse has been growing weaker steadily, and the patient's face begins to assume that sunken, anxious look that we all dread so much to see. As the end approaches the patient no longer makes any effort to vomit, but enormous quantities of malodorous, dark fluid roll out of his mouth without straining or retching on his part. The abdomen has become distended and tympanitic. Gradually the patient grows weaker and weaker, and dies from exhaustion. That this is no fancy picture, I am sure that more than one of you can testify. Let us analyze the symptoms a little more in detail. The constipation, of course, explains itself. The pain is due to irritation of the peritoneal nerves and the meteorism to decomposition of the stagnant contents of the intestine, with the consequent development of gases. The vomiting is not so easily explained. It is commonly accepted that it is due to reversed peristalsis, but no such elaborate explanation is necessary to account for it. When the stomach has been emptied by violent vomiting, it is an easy matter for the contents of the intestine to flow into it, particularly as the obstruction makes of the intestine a rigid tube. The decomposition of the intestinal contents gives them the characteristic foul odor. It is usual to call this fecal vomiting, but I question very much whether genuine fecal matter is ever vomited. No information as to the seat of the obstruction can be gained from the character of the vomiting.

In most cases of ileus the diagnosis is not hard to make. The train of symptoms outlined above points almost conclusively to obstruction. However, it is not sufficient to make a diagnosis of obstruction, but an effort must be made to determine the cause, kind and location of the obstruction. Let us recur for a moment to the dynamic form of ileus, which you may remember we defined as that due to paralysis of the intestines. In this form of ileus there are two questions to be

answered before a successful diagnosis can be made, or satisfactory treatment given. In the first place we must ask ourselves, is peritonitis present? and in the second place, what is the cause of the peritonitis? The answer to the first question is unfortunately only too easy. Any physician of experience notes with dismay the sunken face, the tympanitic abdomen, the pain, the rapid pulse and the other phenomena of peritonitis. The answer to the second question is not so easy. But if we remember that the appendix is responsible for sixty per cent. of the cases of peritonitis, this offender will have our first attention and the hernial orifices our next.

It is well to remember that in some forms of circumscribed peritonitis, such, for instance, as that form due to inflammations of the tubes and ovaries, there is an ileus which is temporary. But the symptoms are so much milder than those of a diffuse peritonitis that the acute observer is rarely misled. The severe symptoms of collapse are wanting, and gas can be forced along the intestine by pressure. These cases usually recover under rest and medical treatment.

In the diagnosis of the mechanical form of ileus it is important to determine whether we are dealing with strangulation of the bowel or with genuine obstruction. The cases of strangulation are much more rapidly fatal. A strangulated hernia, for instance, can produce gangrene of the intestine within twenty-four hours. Another point of great importance, and one that, in my opinion, has not been impressed upon the minds of physicians with sufficient emphasis, is the fact that anything that causes the intestinal peristalsis to be lost for a few hours will permit the passage of intestinal bacteria through the wall of the paralyzed bowel. Many cases of peritonitis in the early hours of an obstruction are to be accounted for in this way. Experiments on animals show that this bacterial exodus may take place within eight hours.

The symptoms of obstruction from strangulation are rather typical. A patient in full health is seized suddenly with intense abdominal pain. The phenomena of shock soon follow. Then appears the vomiting, at first of mucus and stomach-contents; then bile and the so-called fecal vomiting. Collapse is a

prominent symptom. The peculiarities of the attack are its suddenness and the absence of any antecedent symptoms. There may be a slight bowel movement in response to enemas, but after this the obstipation is absolute. In not a few cases of strangulation, examination of the abdomen causes great pain and often gives very little information. This is particularly true if the abdominal walls are very fat. Where the strangulation involves but a few coils of intestine the localized pain and tympany make it apparent at what point the obstruction exists. More often the observer is confronted with a uniformly distended abdomen, and can determine nothing beyond the fact that obstruction exists. In ileus due to obstruction there are also fairly well marked symptoms. In this form the onset is not so sudden. Instead of a patient in full health we have one that has been complaining for a shorter or longer time of symptoms of abdominal trouble. Then again the acute initial pain is wanting; there is not so much collapse and, lastly, one can usually make out coils of distended intestine, which show peristaltic action. In children, symptoms of obstruction should suggest invagination, a diagnosis that is made certain if a finger in the rectum can feel the lower end of the invaginated gut. An abdomen that is uniformly distended means obstruction low down in the small intestine or in the colon. On the other hand, symptoms of obstruction with a collapsed or not much distended abdomen point to obstruction high up. The reason for this is obvious. Where the obstruction is high up the intestine below becomes empty and shrunken, while the reverse occurs in the forms of obstruction lower down. In some cases waves of peristalsis may be followed across the abdomen, and seen to stop at a certain point. This phenomenon is seen more especially when the obstructed point is near the cecum.

When all is said and done, however, the best that we can do in many cases is to determine that obstruction exists without being able to make out the particular type, and this is the essential thing after all, as it is more satisfactory to the patient to get well than to have the particular cause of his disease discovered, or rather to have valuable time lost in refinements of diagnosis.

Treatment varies with the type of the ileus. In both forms, however, there are certain precautions to be observed. The first of these is that cathartics should not be pushed. As constipation is the prominent symptom in all types, it is natural to try to overcome it by the use of laxatives. The result is a distention of an already overstretched intestine which may lead to a dangerous thinning of the gut, and even to perforation. In addition, the patient's chances of relief by operation are diminished. It is a not uncommon practice among a certain class of surgeons to blame severely the general practitioner for the use of cathartics in this class of cases. I have never shared this feeling. What can be more natural than for a physician, when called to a case where constipation is the prominent symptom, to attempt to relieve the condition by laxatives? Then again, in certain cases, the obstruction depends upon a fecal accumulation and a judicious use of cathartics will overcome it speedily and safely. I am quite sure that if any one of these carping surgeons were to see a case of this character in the first instance, his first procedure would be to give a cathartic. It is not the use of cathartics, but their abuse that does harm. I have seen cases where the physician, after exhausting his resources in the cathartic line, had called another physician in consultation. The second physician was quite sure that if *his* favorite purge were given relief would be prompt. After a few days of this kind of treatment the patient's condition may be imagined. In my judgment, the physician should have in mind the possibilities of obstruction in every case of obstinate constipation that does not respond to a reasonable use of cathartics. The possibility becomes a strong probability, if to the constipation is added vomiting. Then, if it seem imperative to move the bowels, this should be attempted by the use of high enemas. By placing the patient on his side and having the bag of the syringe not over two feet above the anal orifice, many quarts of fluid may be introduced into the large bowel, and it may be cleared thoroughly of all accumulations.

In the dynamic form of ileus, due to peritonitis, the proper treatment manifestly is to try to find out the cause of the peritonitis and to relieve it. In some cases this is possible;

in others operation would mean the death of the patient. It is in this last class of cases that the treatment advocated by Ochsner is useful. Ochsner has been much misrepresented in this matter. His teaching has been misunderstood by those opposing operative measures in these cases. It was never his intention to advocate this plan of treatment as a routine measure in all cases of peritonitis, but only in those where an immediate operation would result fatally, and where a few days' delay would result in the formation of adhesions that would wall in the pus and make operation safe. As you are doubtless aware, the underlying principle of this form of treatment is the fact that peristalsis spreads infection. If peristalsis can be limited, infection may be localized. This limitation is accomplished, first, by washing out the stomach thoroughly and carefully until the water returns clear. Then the intestines are put at rest by withholding absolutely from the stomach everything in the way of drugs, liquids or nourishment. Not even water may be given. The thirst may be relieved by the use of salt solution by way of the rectum. Rectal feeding, not to exceed four ounces every four hours, is an important part of the regime. By these means peristalsis is reduced to a minimum and meteorism is limited. In appropriate cases the method is beyond cavil. Its use demands judgment in determining what cases are appropriate. It is a method particularly useful to physicians remote from surgical centers, as it enables them to carry their patients along until they can be moved safely or surgical aid obtained.

Blake's method, used by many surgeons, is to try to remove the infecting focus if possible, and then to wash the peritoneal cavity thoroughly with salt solution, until the fluid returns clear. This method would be rational if it were possible to wash thoroughly the peritoneal cavity. My objection to it is that it is impossible to get the irrigating fluid into every corner of the peritoneum, and if the washing is done incompletely, infection is spread to areas before uncontaminated.

Yet another plan of treatment for these cases of ileus due to peritonitis is that advocated by Murphy. The infecting focus, appendix, gall-bladder, or whatever it may be, is rapidly and gently removed. All irrigation, sponging

or rough handling of the intestines are avoided with scrupulous care. A drain is put in the incision. The patient is put in the sitting or Fowler position. Thus the pus is made to gravitate to the lowest part of the abdomen. Large quantities of salt solution are instilled by the rectum in the following manner: A short nozzle with many perforations is used, held in place by a strip of adhesive plaster around the thigh. To this is connected a reservoir of salt solution, elevated from twelve to eighteen inches above the buttocks. This is kept warm, and is refilled as necessary. The essential thing is to have the fluid enter the bowel slowly, not over a pint an hour. As much as eighteen pints may be absorbed in twenty-four hours. If the pulse become full or the rectum irritable, the flow may be stopped.

This plan is growing in favor steadily. To my mind, it is based on correct physiologic and surgical principles. We are beginning to realize that nature will take care of infection if the vital powers of the individual can be maintained. In this plan of treatment nature is not interfered with, but assisted. To get into the abdomen as fast as possible; to get out quickly, and with a minimum of traumatism; to provide for the escape of toxic products, and to fill the depleted blood vessels with a physiologic plasma which in addition stimulates the kidneys, is, to my mind, the best kind of surgery for this condition.

In many cases I believe, too, that it is good surgery not to attempt too much. In suppurative appendicitis, for instance, the effort to get the appendix at any price often means that the price is the life of the patient. If, in the effort to get the appendix, we break down the barriers that nature has thrown around, and exudate, and thereby cause infection of sound peritoneum, we have certainly not done good surgery. Much better would it be to content ourselves with a simple opening and drainage of the abscess, leaving the removal of the appendix to a more favorable time. Too often, I am sure, we lose sight of the fact that we are not operating for a given condition, but upon an individual with that condition.

Coming now to the management of the mechanical form of ileus, it is apparent that the only treatment for strangulation or obstruction

must, of necessity, be operative. The only question is, What form of operation is necessary? This must be determined by the condition of the patient before operation or the conditions found when the abdomen is opened. In a general way, four methods are at the disposal of the surgeon: 1. The entire removal of the cause of the obstruction. This includes relieving the strangulation in hernia; the division of bands; untwisting a volvulus; resecting pieces of strictured gut, etc. 2. If the cause of the obstruction cannot be removed it may be eliminated from the pathway of the fecal stream. This means that the intestine is cut above and below the obstructed point, and the two ends joined together. The ends of the piece of gut containing the obstructed point are also closed. 3. A simple enter-anastomosis may be done, and the fecal stream thus passed around the obstructed point. If the main road is closed we make a new road around the closed point. For instance, in cases of cancer or tuberculosis of the cecum, where resection is impossible, the small intestine above may be joined to the colon below the obstruction, and thus free way given to the fecal stream. Of course, this is temporary only, but it saves the patient from immediate death and makes the rest of his life comfortable. 4. A temporary artificial anus may be made. Let it be borne in mind that death in these cases results not only from obstruction, but also from toxemia, due to absorption of poisonous alkaloids generated by decomposing bowel-contents. One who has seen and smelt the vomit in these cases need not be told that the absorption of such material must be fatal. Now, if these two conditions can be relieved by a comparatively slight operation, is it not our duty to give our patients the benefit of it? Many cases of obstruction require the highest surgical judgment. When seen the patient has been ill for days, and it is evident to the experienced surgeon that a general anesthetic and a prolonged operation will be fatal, almost certainly. Many surgeons think that they have not done their full duty in these cases unless they open the abdomen, and try to relieve radically the cause of the obstruction. Too often the result of this procedure is the death of the patient, the surgeon being left to console himself with

the thought that he has done a complete operation. I must insist again, with emphasis, that we are not operating upon an obstruction, but upon a patient with obstruction. If we can overcome by a comparatively slight operation the conditions that bring death, we can carry the patient over the crisis, and do a more radical operation later, when his condition will justify it. This can be done by an enterostomy, or, in plain English, by making an artificial anus. Some of the advantages of this procedure are: 1. It can be done rapidly, without any tax on the patient's vital forces already at the lowest ebb. 2. It can be done under local anesthesia, and thus the added dangers of a general anesthetic avoided. 3. It does not need for its performance a skilled surgeon. This is of great importance to those living at a distance from good surgical assistance.

I deem it a matter of so much importance that I will ask you to pardon a brief reference to the technique of the operation. The incision may be made anywhere in the abdominal wall, but it is evident that the lower down in the intestine the opening is made the better it will be for the patient. Accordingly, the best incision is one in the lower right quadrant of the abdomen, as we are more liable to find the ileum there than elsewhere. The skin and underlying tissues may be anesthetized by a weak solution of cocaine; 1 to 100 is strong enough. The solution is improved by the addition of adrenalin. As soon as the peritoneum is opened, the first coil of intestine that presents is seized and drawn out of the abdomen. One need not stop to identify the coil; any one will do. If a Paull or Mixter tube, like the one I show here, is at hand, it is inserted and connected with a rubber tube for the purpose of carrying off the fecal matter. If these appliances are not at hand, the intestine is sewed to the peritoneum all around. If the case is urgent, the intestine may be opened at once, but a few hours' delay is desirable, to allow for the formation of adhesions. This is all there is to it, and it can be done by any one having a rudimentary knowledge of surgery. I repeat, that it is not necessary for any patient to die from obstruction when such a simple operation will relieve the present symptoms, and permit him to recover suffi-

ciently to undergo a more radical operation. Indeed, I may as well confess that my prime motive in presenting for your consideration such a well worn theme was to advocate strongly this life-saving measure. It is not my intention to tire you with a recital of a long list of cases. Suffice it to say that, like any other surgeon, I have had to deal with obstruction from nearly all the causes responsible for its occurrence. Some patients have recovered and some have died. In the cases operated on early, recoveries predominate; in the later cases more died than recovered; many more.

I shall try to sum up my experience in this class of surgery in the following conclusions:

1. The preferable treatment for dynamic ileus, due to suppurative peritonitis, is the removal of the focus of infection; the best after-treatment being that advocated by Murphy. If the removal of the focus is not expedient, the Ochsner method gives the patient the best chance.

2. True obstruction is characterized by a fairly constant group of symptoms which should enable a diagnosis to be made in the majority of cases.

3. If a diagnosis of probable obstruction is made, cathartics should be withheld. There is no objection to the use of enemas.

4. An early diagnosis is a great factor in saving life in cases of bowel obstruction.

5. In true obstruction the only remedy is surgical intervention.

6. The choice of operation depends entirely upon the condition of the patient.

7. While radical removal of the cause of the obstruction is the ideal operation, it is not to be advocated as a routine measure in all cases.

8. In many cases the making of a fecal fistula is a life-saving procedure.

9. As general anesthesia adds materially to the danger in operative cases, local anesthesia should be used whenever possible, and always in making a fecal fistula.

1013 Fifteenth Street, N. W.

"Deaths of rich men oft remind us
That we make a sad mistake
If we think to leave behind us
Wills that lawyers cannot break."

SOME OBSTETRICAL EXPERIENCES.*

By WILLIAM E. ANDERSON, M. D., Farmville, Va.

There have been comparatively few papers on obstetrics presented to this Society since my connection with it. At least ninety-five per cent. of us do obstetrical work, and the remaining five per cent. are called upon to treat some conditions of either mother or child, connected with the act of parturition.

The rapid progress we have been, and are now, making in the treatment of diseased conditions, both medical and surgical, has concentrated the efforts of the profession and specialized much of its best talent. The medical profession is justly proud of its recent accomplishments, and the public is to be congratulated.

My recent participation in the International Congress on Tuberculosis, held at Washington, D. C., has even more thoroughly convinced me that the profession has the confidence and co-operation of the general public and that they will from now on aid our efforts more intelligently and efficiently than they have done.

Bacteriology, pathology and general scientific research into diseased conditions has taught us much. We, as a profession, must continue to investigate and cure morbid conditions, but I have always felt that I accomplished more when I kept a person from getting sick than when I cured one of sickness. The profession and people generally, are now devoting more time and attention to just this branch of work.

Preventive Medicine, State Medicine, Sanitary Work, to remove the cause of disease and thereby be able to control it, or prevent it; the study of the origin and the spread of the various contagious and infectious diseases, are all now well up to the front. I have recently been impressed with the fact that many of the best men in the world are exercising their faculties and energies to the full extent in this field.

Parturition, child-birth, the cause for the practice of obstetrics, notwithstanding it sorely taxes the energy and efforts of many of us, and frequently, generally at most inconvenient times and often under adverse circumstances, is the one condition of suffering of which we know well the cause, and yet have no desire to remove it. Approximately one-

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half of the human race must continue to suffer the pangs of child-birth, notwithstanding the many who are earnest in their efforts and use of various methods, to indulge in the cause and prevent the effect, and notwithstanding the fact that the whole medical profession is so completely united as to the cause of the condition that there is not even a German Koch to stand erect in opposition.

Fortunately, child-birth is not a disease, but a normal function, and its normality should always be kept in mind and shown the utmost consideration and respect. If there must be abnormality, be certain that nature inaugurates it and not the doctor.

Edgar truly says, "Imitation of nature is the key to the management of normal labor. By management is not meant interference, but watchful observation."

As the title of this paper implies, it is my intention to give you some of my obstetrical experiences, which I consider worthy of note.

I have been in general practice for twenty years and have had more than the usual percentage of obstetrical work; consequently feel that I have been confronted with about all the complications and pathological conditions likely to be found in child-birth. The women of the present day are thoroughly progressive, however, and new complications and conditions may at any time be invented; consequently, I am continually on the lookout.

Molar Pregnancy. The first case I consider worthy of our consideration and attention, I came across the third year of my practice, the only one I have seen, a case of *molar pregnancy*, or *hydatiform mole*. I was called fifteen miles into the country at night; found two physicians of wide experience in attendance; they had been with the patient twenty-four hours, but were uncertain as to diagnosis and method of procedure. At the time of my arrival they had about concluded that they had a case of *placenta praevia*.

Woman twenty-four years old, first pregnancy, and supposed to be about seven months advanced. She had had watery and sanguineous discharges for six weeks. Hemorrhage rather profuse for twenty-four hours before my arrival; patient weak and thoroughly alarmed. On palpation I found the uterus abnormally distended, and on digital examination felt a

doughy substance, but could neither outline the fetal head, nor hear the fetal heart. I was satisfied there existed a very unusual condition, and lost no time in making vaginal examination; found os dilated sufficiently to introduce two fingers, but the tissue I came in contact with did not feel like placenta. Woman bleeding too much to admit of delay; consequently I said to the attending physicians, we must empty the womb; showing them at the same time some of the bladder-like, or more correctly, berry-like mass, which I had peeled off by introducing my fingers between it and the uterine wall. This, I at once concluded, was mole, and I continued to remove it by the same process until I could introduce my hand into the womb. I worked on, bringing one handful after another, until I had filled two large sized chambers; afterwards I poured it into a water bucket and filled it within two inches of the top.

The growth extended into the endometrium, and the process of removing it was tedious and tiresome, but I peeled it off and scraped the entire surface with my fingers. Did not curette, because of danger of perforation, due to thinness of uterine walls. After emptying the womb thoroughly, used a very hot intra-uterine antiseptic douche; held womb firmly with hand for some time; gave her hot saline enema, and all the milk she could drink, and advised keeping her under the influence of ergot for several days. I did not visit her again, but she made an uneventful recovery and has since given birth to two healthy children.

Hydatiform mole is a very rare disease, as you know. Madam Boivin, of Paris, found it only once in twenty thousand cases and Edgar four times in fifteen thousand cases. As to its cause authorities do not agree.

It is a cystic degeneration, supposedly of the type of the chorionic villi. I believe that the primary defect causing the degeneration may be either with the ovum or mother. My case was especially peculiar, because it occurred in a young woman, primipara, and no recurrence.

Smallpox and Labor. My next experience to which I shall direct your attention, is one of the most disagreeable I ever had. Mother eight months pregnant, had confluent smallpox,

and gave birth to child which had it at time of birth.

I was first called in to see the father, and found him with well developed case of smallpox. His wife, eight months pregnant, was nursing him, and there were three children in the same room. I promptly vaccinated the mother and the three children, but it was too late; the disease was ahead of me, and on the fourth day they all developed variola.

I had thirteen cases of variola on hand at the time, and had on duty every available nurse.

This woman continued to nurse her husband, and most of the time the children, as the only other person in the house was an afflicted sister of the father. No one else would go there. At the worst stage of the disease I was called in the night to attend the woman in labor.

I hope none of you have had, or will have, the experience of delivering a baby under such circumstances. Mother, father and three children in one small, close room at the worst stage of this miserable disease, and you have to help an innocent babe into the world in the midst of it, without a soul to assist, not even to hand you anything, and then find the baby already has the disease! Five distinct vesicles showed upon the baby's body, and one on the face. He developed twelve or fifteen more in the following two or three days, six of them reaching the pustular stage, forming scales and leaving pits or pock marks.

He is a strong healthy boy at present, nine years old. I have vaccinated him several times, but he continues immune.

The mother made a slow, but uneventful recovery. This is my only experience with obstetrical smallpox.

Others, who have had more cases, state that usually the pregnancy is interrupted early in the disease, and the child is either born dead or moribond, unless the disease is very mild.

I have seen no record of a living child being born at the pustular stage of confluent smallpox. Kaetenback, however, reports a case of triplets, in which two of the children were born with smallpox, while the third was healthy. A case has also been reported in which the mother was not known to have had variola, while the fetus was born with it.

I am giving you my experience; so shall not discuss these, except to say they might be used as arguments for earlier vaccination, or vaccination in-utero.

Case three: *Head and Shoulder Impaction, Thoracentesis, etc.* Called in consultation one mile from town, to see a strong, healthy mulatto girl eighteen years old, who had been in labor two and one-half days, primipara. Left shoulder presentation, fourth shoulder position, left scapula posterior. Hand and forearm outside of the vulva. Uterine contractions still very strong, and child forced down low and wedged into the pelvis, so that it was impossible to change the position and deliver, even under chloroform. Attending physician exhausted by continued efforts to do so, and had surrendered. Child dead, and woman had concluded that she soon would be. Position of child such that decapitation could not be performed, and Cesarean section out of question.

I advised dissection and delivery by sections, but this the attending physician said the woman could not stand, and he would not agree to it. His remark was, "Let's go home and let her die in peace, no use in killing her." To this I strenuously objected, and told him that I had never left a woman undelivered, and did not believe it justifiable.

It was his case, however, and he being an old gentleman, for whom I had the highest regard, there was nothing else for me to do. I told the girl's father before leaving, I thought she would live through the night, and if he would send for me the next morning I would return. He did so, but the attending physician declined to go with me.

I then got another doctor to go and give the chloroform. On arrival at the cabin we found a crowd of negroes sitting out in front waiting for the woman to die. One of them, a big black buck, who lived on the same farm with the girl and felt a friendly interest in her, had during the night cut off the protruding forearm, near the elbow, with a tobacco knife and hatchet. I abused him for this act and he replied that he "didn't mean no harm, thought he would get part of that child out of the way and may be the other would come on." He probably had an idea of improving the corpse from a cosmetic standpoint.

The splintered bone was an additional inter-

ference in attempting to correct the malpresentation.

The girl was thoroughly exhausted and almost pulseless, but uterine contractions started as soon as I again attempted version. Shoulder thoroughly impacted; woman and everybody around her begged me to let her alone and let her die easy. This I positively refused to do.

I opened the child's thorax at the most accessible point, promptly removed its contents; then went through the diaphragm and removed the abdominal viscera. This gave me room enough to push the head and shoulders up to the woman's left by placing the fingers of my left hand in the upper part of the thorax. I found that the amputated arm with the splintered bone end would have to re-enter the womb, so drew the skin and muscles together and pinned them together with two safety pins to prevent laceration of mother's parts. I brought down hips of child and then feet, and delivered without further complications.

Strange to say this woman had no sepsis and made good recovery; was a good servant in Farmville for two years afterwards, and then went North. About a year after her advent into northern society she died in a New York hospital, undelivered, and from what her sister, who was with her, told me, in similar condition to the one I have described.

She evidently forgot her voluntary vow taken in my presence, "that she would never again take any chances," ex consuetudine.

This woman had a small pelvis, notwithstanding she was apparently a perfectly robust specimen of the mulatto type.

Shoulder presentations occur about once in two hundred cases. I have seen three; the other two were corrected by version, and the children were born living. I saw them earlier than I did the case described; in one I pushed up the shoulder so as to engage the head, and had no further trouble; in the other, I did a bi-polar podalic version.

Case four. *Congenital Hydrocephalus*: woman forty years old; seventh confinement. Oldest child had spina bifida, also no sensation in two toes on one foot; one toe frequently sore and practically dead. That ankle and lower leg not perfectly developed; other children living and healthy.

This was the fourth time I attended her in

labor. At two of the previous times she had post-partum hemorrhage, and the other one breech presentation; consequently I was looking for trouble, and expecting almost anything to happen this time, had her under close observation.

She was very uneasy, expecting to die. Had a premonition that this "would certainly be her last time, and the worst of all," and so it proved. I noticed that the abdomen was greatly distended during the last month of pregnancy, and she insisted that she was "larger than she had ever been and would have two."

Abdominal palpation disclosed what felt like a large tumor above pubes, rather than a foetal head. Cardiac sounds above umbilicus; membranes ruptured about thirty-six hours before labor pains came on. This alarmed the woman more, as she had "never had that to happen before."

I reassured her; visited her several times, but did nothing to inaugurate labor. Did not even make vaginal examination. When labor was established, vaginal examination revealed cervix sufficiently dilated for me to outline the immensely large head with wide open sutures, through which I could by appropriate maneuvers obtain fluctuation. I carefully palpated the structures of the head, and was positive I could feel the edges of the parietal bones, notwithstanding the wide space between them felt like a bag of water. I was certain of a head presentation and was certain that the head was abnormal, not only in size but in contents.

I had never seen a case of hydrocephalus, but the "feel" somehow felt hydrocephalic to me. Woman now extremely nervous, so much so that I now feared convulsions as a further complication. Partly to control her, and partly because the pains were now increasing, both in frequency and severity, faster than I desired under existing conditions, I put her under the influence of chloroform. She had a weak heart; I had noticed on former occasions that she did not take chloroform well; besides I do not like to give chloroform to women prone to post-partum hemorrhage.

She also expected to die from the chloroform, and told those around her good bye. Just here, I concluded that two doctors might "get busy" with this patient, and had a hurried 'phone message sent for one. That doctor was out, and

another was promptly called. It seemed to me that he was slow appearing, so having had my instruments prepared I perforated the child's head without further delay. The cerebro-spinal fluid gushed out, an immense quantity of it, and the fetal head collapsed. No brain tissue escaped and I thought of the possibility of the child being born alive, so pushed the perforator to the base of the skull and did some vigorous twisting in the medulla locality. Thought now I could see "day breaking"; it proved a very slow dawn; the light in the east, and in the pelvis, was very dim for what seemed to me at least half an hour. This woman's condition was bad. Before putting her under chloroform and perforating the fetal head, I had feared rupture of the uterus; now I feared hemorrhage. She was completely relaxed, womb and all, and the child's head was apparently completely collapsed; I grasped that plethoric scalp tissue and expected to pull the baby out; it would not come. The scalp was so bulky and the bones so large, that notwithstanding their thinness they just would not come through; I introduced a blunt hook into the head, peeled the parietal bones out of scalp, and removed them separately.

With the cranioclast I now completed the delivery, and drew a long breath. This child did not have a handful of brain tissue in all; that was in a thin, rather firm layer, and poorly developed. The spine was very imperfect, open entirely for a space of three inches about middle, and two inches near lower end; cord exposed and evidently defective; shoulders and chest rather large, but limbs small and poorly developed.

Mother lost considerable blood, due to general relaxation and absence of contractile power of uterus. She recovered and is now in good health. I am grateful that her age precludes the probability of any similar performance in the future.

I have had quite a number of other interesting experiences but the length of this paper will not permit my giving you more in detail.

My father, who practiced medicine over fifty years, several times told me that I was one of the "luckiest practitioners he had ever known." I begin to think that true, in regard to my obstetrical work, at least. I have delivered over four hundred women, have not used forceps over twenty times, have done five craniotomies

(in all of which the woman's life was seriously and immediately threatened); have had fourteen breach presentations; have, as previously stated, contended with about all the various forms of dystocia; but have not yet lost one of my own patients in child-birth, or from any disease connected with it.

You will please excuse the personal boquet and allow me to "knock on wood." I have delivered seven pairs of twins, twelve of the children born living. Delivered one pair of twins in a fashionable home, when not a person was in the house but the woman and myself. I got "busy." Absence of assistance was due to the fact that labor came on unexpectedly in the night; servants were away; the man came for me and from his account of what was going on I sent him right on after nurse, and I hurried to the home. On arrival, found I had no time even to call in next door neighbors. Before father or nurse either appeared, both babies were lying on the bed wrapped up, and the woman was laughing at the situation.

In conclusion, I wish to say that I believe the use of forceps in normal labor is becoming too fashionable. I see the evil effects frequently. Injuries often done mother or child, oftentimes both, by the indiscreet, unskillful and unjustifiable use of forceps. Have patience and exercise watchful observation. Use practical sense and good judgment; act promptly when necessary, but not before, and all will be

In fact, as I have often stated in meetings of this Society, much of the trouble incident to labor cases may be avoided by intelligent treatment in advance. The conditions to be confronted in cases of this character are entirely natural, and the function a normal one. In the simplest states of society, where the physical structure and condition of the woman is not affected by conditions due to civilization, child-birth is rarely accompanied by serious difficulty or great complications. The purpose should be, therefore, during the period of several months preceding confinement, to prepare the woman's system to perform its normal functions with the least possible strain; to put the system and secretions in good order, and to tone up, as far as possible, the muscular system. By this course, taken in advance of confinement, the difficulties of child-birth can be greatly reduced, and the recovery of the patient facilitated.

THE ECONOMICS OF APPENDICITIS.*

By W. LOWNDES PEPLE, M. D., Richmond, Va.
Surgical Associate St. Luke's Hospital.

What is to be said of appendicitis is equally true of many other acute intra-abdominal troubles which fall suddenly and take life quickly. But from the greater frequency and the more widespread knowledge of appendicitis I have chosen to confine my remarks to it alone.

Appendicitis, or, better, its recognition, has become so common that, like typhoid, it is now a dreaded possibility in every family, a matter of calculation with every thoughtful man who runs close to the salary limit. What would I do if I should have appendicitis? How much would it cost me in time from business and in actual outlay of money? These are questions which men are asking, and we should be ready with an answer.

To save life is not the only question in the treatment of appendicitis; a tedious convalescence followed by a large ventral hernia usually means bankruptcy to a laborer. To get the patient out of bed on his feet with an abdominal wall that will stand the strain of work, in the shortest possible time, is a question, with many men, second only to life itself.

If every case of appendicitis could be operated upon within the first six or eight hours from its inception, the cost in life and time and money could be foretold with far greater accuracy than in cases of childbirth. But the problem is a most complex one, blocked by a hundred varying lesser problems from human obstinacy and the closure of telegraph stations, all down the line through long distance phones, railway schedules and the condition of our country roads. Who has not seen the inadequacy of long distance phones throw well-laid plans into helpless confusion, or the closing of a small telegraph station at night play havoc with a rapidly advancing case. The relation of good roads to emergency surgery would make a splendid paper of itself, and should prove a cogent argument in attaining better thoroughfares. I shall never forget the look of one poor fellow with rapidly advancing peritonitis, as he gave me the signal of distress

of some fraternal order. I wish the State Legislature could have seen that signal; it was really made to them. Twenty miles of road cut up by saw-mill wagons and frozen as hard and sharp as slag lay between him and the railroad. Had there been a road over which a sick man could travel he would have reached the hospital at least eighteen hours earlier than I got to him. To operate upon every case of appendicitis within a few hours of its inception is ideal: Utopian. It cannot be done. Many cases are far advanced before the physician sees them, and many hours necessarily elapse before they can be taken to a hospital or a surgeon brought to them.

The urgent request for an immediate operation upon a patient but slightly ill, is like a bombshell in a community where the insidiousness of this disease is not understood. Many individuals have to be convinced by a series of progressively sharper attacks. Others must feel the presence of death itself before consenting to an operation. Death from peritonitis from a case not operated on is the one thing alone for many others who hold tenaciously to the belief that one cannot die from appendicitis except under the auspices of a surgeon. One such death may mean the saving of twenty lives in that vicinity in the five years that follow it.

The question of early operation cannot be settled by decree nor imperial ukase; it is one for time and education. In the meanwhile, we must treat the cases as we find them, and do our best among the conditions which surround us.

To repeat, second only to life itself is the big economic question of cost in time and money to the patient. It is this phase of the problem: getting the patient out of his bed, back to his work and fit for his work in the shortest time, and with the least expense, to which I wish to direct attention.

This discussion does not apply so forcibly, to the very rich, who can afford to lie abed indefinitely, and take their convalescence at their ease, but rather to the big body of plain people who work with their hands, and hate debt.

While my own series of cases (fifty-three in number) is very small, in my work at St. Luke's and the Virginia Hospital I have assisted Dr. Stuart McGuire in fully a thousand

*Read before the thirty-ninth annual session of the Medical Society of Virginia, held at Richmond, October 20-23, 1908.

more, have had some small share in their after treatment, and, at least, had full and ample opportunity for accurate observation and the drawing of my own conclusions.

The saving of life in appendicitis can be covered by three headings: (1) when to operate; (2) when not to operate; and (3) the treatment of diffuse suppurative peritonitis.

1. *When to Operate.* The startling revelations of the operating table in apparently mild cases of appendicitis, the low mortality and the rapidity and permanency of recovery when taken in the early stage, are steadily forcing conservative men to advise operation earlier and earlier. The widespread lay knowledge of this disease is making the acceptance of this advice an easier matter every year. The repeated sight of gangrene, perforation, abscess, and other complications in cases with no alarming symptoms, the sudden rekindling of cases apparently safely convalescent, and the failure of all the cardinal signs at times, have literally whipped me out of the position of conservatism which I set out to practice eleven years ago. In all cases seen early I would now advise an immediate operation.

In advocating this procedure, I fully realize the consequences of such dogmatism. It means that in a long series of cases with hasty diagnosis usually made at one visit, an occasional error will be made, and a beginning typhoid, an acute pyelitis, or a patient with kidney colic will be subjected to an unnecessary operation; but when we compare such a series with one in which operation has been delayed until each case presents a typical picture, I believe we will all agree that it is better that the very few should suffer unnecessary pain and expense than that the many should lay down their lives.

Theoretically, the lack of preparation in these acute cases would militate against immediate operation; practically they recover just as surely as the well-prepared cases, if perforation or peritonitis are absent.

Operation During Subsiding Symptoms. Quite a number of cases reach the hospital, or are seen by the surgeon when the acute attack is manifestly subsiding, and the question arises: How long to wait before operating. Such patients are usually in good condition, having eaten little and been well purged. If

a waiting policy is decided on, several days will be required in bed and several more in the house on account of soreness. If operated upon at once, much time from business and anxiety of waiting is saved. One should always remember how insidiously a subsiding case may rekindle and become alarmingly acute, and should hesitate to leave such a case where an immediate operation cannot be had.

Nor should we forget the difficulty of differentiating a true subsidence from an apparent one caused by gangrene of the appendix. This point may tax the resources of the most experienced. Operation during apparent subsidence may save, not only time in bed, but often life itself.

2. *When Not to Operate,* in a mild case close to a hospital, or in a case seen late, with manifestly decreasing symptoms, may, in this or that individual instance, be a comparatively simple question. On the contrary, to weigh the chances of subsidence and removal to a hospital, against a night operation, with a bad light, and no assistance, in unfavorable surroundings, is the kind of problem that adds years to one's life.

To relegate a case to Ochsner's treatment as a substitute for operation when it is so far advanced that one is afraid to operate is a question requiring the very acme of surgical judgment, attained only by years of experience, sorrow and hard work. I should far rather have an inexperienced man operate on me early than to have him decide this vital question about me later. I would sooner trust to his hands than his head. In this connection it may be said that former successes with this method in peritonitis of tubal origin should not influence us too greatly in peritonitis from a ruptured appendix, for the two are very different.

3. *The Treatment of Diffuse Suppurative Peritonitis.* Next to earlier operation in appendicitis the greatest advance in the saving of life has been in the treatment of diffuse suppurative peritonitis. Owing to the work of Fowler, Ochsner and Murphy, we have of late made a most decided reduction in the high mortality of these late cases, and unless specific anti-toxins are evolved, we will probably not do much better for years to come with this heavy end of the mortality column.

The first of the economic questions, whether an operation for appendicitis should be done in a hospital or a private home is not so often asked as formerly, for the public now appreciate the "factor of safety" in the hospital which cannot be reckoned in money.

But viewed from the standpoint of dollars and cents, I believe the balance will be oftener in favor of the hospital. In the average hospital case a special nurse is unnecessary while in a private home, she is always a necessity.

The cost of an anesthetist and assistants saved in a hospital, by our "priceless" internes will also help to turn the scale.

The "*choice of incisions*" is a question of foremost importance in the economics of appendicitis. By a proper choice we may be able to cut down the stay in bed by weeks, avoid a hernia and a second operation.

The *median incision* should be employed when some pelvic operation, in addition to appendectomy, is known to be needed. All women with the diagnosis of appendicitis should have a vaginal examination made to eliminate tubal trouble. In doubtful cases, with negative vaginal findings, the McBurney incision should first be made, for if through it stretched to admit half a hand, the pelvic organs are found to be normal, at least two weeks in bed have been saved the patient. If these organs are diseased, the gridiron will do her no harm, and will not retard her convalescence. Exploration, if it must be done, through an incision, should be done through the one that will heal firmly quickest.

The Rectus Incisions. When in doubt as between the appendix and gall-bladder, and the appendix cannot be reached through the short, high rectus incision, it is best to make an additional gridiron rather than prolong the first cut downward. Not only will the two short wounds heal more firmly with far less danger of hernia, but possible paralysis of the right rectus from cutting its nerve supply will also be avoided.

The McBurney, or gridiron incision is the incision of choice in most cases. When closed with its layers at right angles, it gives a wound calculated to stand the strain of work earlier than any other.

In abscess cases the pus is evacuated without invading the general cavity oftener than

by other incisions; for the large majority of abscesses are post cecal, and the incision far out exposes the line of cleavage between the cecum and the iliac wall. This hugging of the iliac wall puts the distended cecum like a natural cofferdam between the focus of infection and the general cavity, and makes radical work far safer in the non-adherent post-cecal cases. Removal of the appendix in such cases can be done with comparative safety behind this buttress, and a second operation not infrequently avoided, a point that cannot be too strongly emphasized.

When a wide wound of exit is needed, the McBurney can readily be made to gape by cutting the internal oblique above or below.

Drainage. To drain the abdomen of a workingman is frequently to drain the resources of his entire family. This question cannot be remedied by failing to drain cases that demand it; we must operate earlier to do away with drainage; we cannot abolish it. I have found the drain a very potent argument for early operation when a sinking man begins to grasp at the straws of delay.

I recall a case of a machinist with a rapidly advancing case, seen eight hours from its inception. It was midnight, and he asked why it could not be postponed until morning. He wanted to know the difference. I replied, "The difference of drainage. If I operate to-night you will probably be sewed up tight, which means ten days in bed and a sound belly-wall. If you wait until morning it will probably mean propping open the wound with a wick of gauze, with from three to six weeks in bed, the possibility of a rupture and a second operation to cure it." It so happened that he was put in the room with a man upon whom I had operated two weeks earlier in the late stages of diffuse peritonitis. He left the hospital in ten days with his room-mate still in bed and draining freely, both converts to the early operation.

In certain desperate cases of advancing peritonitis all other considerations are sunk in the bigger issue of saving life. But in quite a large majority of drainage cases we expect recovery; the big issue is not paramount. We should in these not only provide for adequate drainage, but do so with the least possible damage to the abdominal wall, and leave its

out or separated parts in such relation to each other that a good functional result may be confidently looked for.

Adherent abscesses pointing anteriorly should be evacuated either through the fibers of the rectus or through a gridiron, according to their location. If we go too far out for a rectus incision, or too far in for a gridiron, we fall into the tendinous interval between these parts in which hernia is almost certain to follow drainage. By partially closing the wounds without tension and sewing short rubber-tube drains into the abscess cavity, they drain or heal more quickly, and are far less liable to be followed by hernia than when the internal oblique is cut across and partially repaired.

There is a class of cases with a small focus of pus or free oozing from adhesions, or when it is feared that contamination has taken place, in which a small drain of split rubber or a little cigarette, the so-called "safety drain," directly to the area is all that is needed. I wish to suggest here what I have not yet put into practice: the introduction of the safety drain through a stab in the internal oblique above or below its line of closure. This seems to me better than draining through all the structures of the gridiron, for being near its upper or lower angle, it leaves a stronger wound than one with a weak center. It has the advantage over an additional stab wound beside the gridiron of being readily dilated with forceps if occasion should demand.

In the worst class of cases with large non-adherent abscess or diffuse peritonitis, it is wise to think only of the life at stake, and put in free drains through ample wounds.

I prefer a single incision close to the iliac wall with the internal oblique cut below its line of separation, one roll of gauze, usually unprotected, iodoform directly to the focus of infection, and a large cigarette or split rubber into the cul de sac, resting against the iliac wall laterally. This not only steadies the drain, but I feel less fear of obstruction or subsequent adhesions than when the intestines surround it on all sides.

Secondary Suture in badly gaping wounds after the drains are out will not only save much time in bed by proper approximation of its parts, but will materially lessen the probability of hernia. In order to put such wounds

into condition for suture, I know of no better application than hot fomentations of chloral hydrate solution, two grains to the ounce. I have seen ugly, foul-smelling wounds rapidly clean up under its use even when the intestines were plainly exposed.

Treatment of the Stump. In all drainage cases the stump should be tied with catgut, and if stitches are needed, or a purse-string is used to relieve the gas pressure, these should also be of small, chromic catgut, rather than silk or linen. I have seen two cases recently in which this little tension loop of linen unduly prolonged the suppuration, which did not close until it was extended when healing promptly followed.

REPORT OF CASES.

The following report does not include appendectomies done in the course of other abdominal operations. There were fifty-three in all, and the operations were performed in five or six different hospitals, in private homes and farm-houses. In scarcely three consecutive cases have I had the same assistants, and twice there was no one save the anesthetist.

Seven were interval cases. All recovered without complications or sequelæ, with an average stay in hospital of about two weeks.

Eight were sub-acute. All recovered without sequelæ. One case was drained as a safety measure, as dense adhesions were encountered. There was free flow of pus, but the patient recovered with a sound abdominal wall. The average stay in hospital was about two weeks.

Ten acute cases were seen early enough or conditions inside justified closure of the abdomen. They were 8, 24, 8, 20, 24, 8, 12, 10, 24 and 36 hours in duration from the earliest symptoms of the acute attack. All recovered without complication or sequelæ; length of stay in hospital or house, about two weeks.

Two acute cases, 14 and 36 hours in duration were drained with safety drains. Both recovered without complications or sequelæ. Length of time in hospital, about three weeks.

Six post-cecal abscesses, not adherent to the anterior abdominal wall were encountered. The peritoneal cavity was invaded and the appendix was removed in all, and all recovered. One returned with sub-acute obstruction a year later, and was relieved entirely by operation.

Their average stay in hospital was one month and ten days.

Three adherent abscesses were opened without going into the general cavity. The appendix was removed in one, and the sloughed organ was extended with the pus in the second. The third drained freely, and did well for twenty-four hours, and then suddenly collapsed and died. Post-mortem showed the drained cavity intact and dry. A second abscess back of the bladder had ruptured. The first two had no complications or sequelæ, and stayed in bed or hospital about four weeks.

One non-adherent abscess was encountered internal to the cecum, against the posterior abdominal wall. She did well for three days, but suddenly developed septic peritonitis, from which she quickly died.

Sixteen cases had diffuse suppurative peritonitis. They were 48, 96, 48, 60, 60, 54, 60, 36, 62, 48, 48, 100, 72, 96 and 54 hours in duration from the first acute symptoms. Eleven recovered; as sequelæ there were two hernias, one that gives no trouble, and one that is so large that it must be repaired. The average stay in hospital in bed was five weeks. Five died: two adults and three children under ten. They were 48, 100, 72, 96 and 56 hours in duration.

Twenty-nine of the fifty-three cases (more than half) were drained.

Apart from the loss of life in these late cases, I trust that the economic value of the early operation has been clearly shown by the foregoing report. When the abdomen is closed it means about ten days in hospital for a city patient, and two weeks for one who has to travel, with the danger and cost of a second operation practically eliminated. Drainage adds from two to three weeks to the hospital board-bill, there is usually a special nurse, and always a bill for the many necessary dressings.

Hernias, fistulæ and obstructions are frequent, dangerous and costly sequelæ in these late operations.

Analyses, Selections, Etc.

Resection of the Bowel—Report of Eleven Cases.

Dr. J. Shelton Horsley, of Richmond, Va.,

read a paper on the above subject before the recent meeting of the Southern Surgical and Gynecological Association at St. Louis. He first took up the technique of the operation and described the advantages of a continuous right angle suture penetrating all coats over interrupted sutures and mechanical appliances. He said that in order to have satisfactory union there must not only be approximation of the serous coats of the bowel, but a mild degree of pressure as well, and this pressure must be uniform along the line of sutures. He reported experiments to show that mere approximation of the peritoneal coat in dogs does not always secure union. In resecting the bowel, he first divides the mesenteric border and clamps and ligates this area before opening the lumen of the bowel. Union is made by a continuous suture inserted in the following manner: starting about one inch from the mesenteric border a mattress suture is inserted so that the knot is on the mucus membrane in the manner advocated by Connell. The short end of this suture is clamped and the needle with the long end makes a continuous mattress suture toward the mesentery. After about one-third of the bowel is approximated in this manner the needle is brought through onto the peritoneal surface and the rest of the union is effected by a continuous right angle suture penetrating all coats. When the point where the original knot was tied is reached, the suture is terminated by tying the thread to the short end of this knot. This makes practically one knot for the whole line of sutures and brings this knot within the lumen. Of the eleven cases reported there was only one death. This was in a patient with strangulated hernia who had been a chronic alcoholic for years. The post-mortem by the pathologist to the hospital showed no sign of leakage or peritoneal inflammation, death evidently being due to suppression of the liver and kidney functions. There were twelve resections in the eleven cases, as in one patient a double resection was necessary. The operations included five resections in four patients for strangulated hernia, one for gangrene from a band, one for volvulus of the sigmoid, two for malignant disease of the large intestine, one for tuberculosis of the cecum, and two for damaged intestine during pelvic operations.

Editorial.

Post-Operative Results.

No one has a higher regard for the true surgeon than ourselves. But we confess to a growing skepticism as to results of many of his operations. There are some conservative surgeons, but there are others who think they must operate upon almost every patient that comes to them. That brilliant results follow in some cases no one denies. But an unduly large proportion of the patients, after operation, fall back into the hands of physicians as nervous wrecks. Their latter days are worse than the beginning. Let almost any physician of at all extended experience go over the list of his so-called "operative cases," and he is compelled conscientiously to come to the opinion that either he was wrong in referring his case to the surgeon, or else that the surgeon was wrong in doing the radical operation; for the patient—generally the woman—is left in a worse condition than she was at first.

We are not speaking of the accidents of surgery, such as death from anesthesia, the apparently unavoidable development of sepsis, the subsequent ulcerations from one viscus into another, and the distresses and deaths that may follow. But we refer to those numerous cases of nervous wrecks that, after the operation has been performed *secundum artem*, and leave the surgical hospital with the record of successes on the books, go back to their homes apparently benefitted for the time being, but who become practical invalids in a few weeks or months afterwards. The womb, the ovaries, the appendix, and other parts have been extirpated. Exploratory incisions have been made of other organs and have been aseptically sewed up, etc. There is left in the body little else than the strictly so-called vital organs. Such are the cases that become the early invalids. They become the anxious burdens of home folks, who would, but know not how to give relief. All sorts of expenses are incurred in rest-cures, resorts for health, hydrotherapy, massaging, doctors and drug bills and special nursing, etc., in the hope of securing recuperation; and yet, the patient goes down and down hill all the time until the grave becomes a grateful resting place.

If one is old enough to go back in memory,

beyond these peculiarly surgical days—say twenty-five or more years ago—he is in a better position than the younger generation to recognize that there is too much radical surgery at the present time; and a demand of the times is to call a halt. The tinkling cymbal and sounding brass of some surgeons have too much caught the ear of the public and profession until the now practice of medicine is classed as a second-rate affair.

While we would not be understood as in the least under-rating the proper sphere of the true surgeon, we do protest against much of the reckless surgery of the day. Good results are what every conscientious doctor should seek; and when a case is plainly surgical the help of the surgeon should be invoked. But many cases that are now hurried to the surgical hospital can better be treated at home or in medical hospitals.

Under the influence of some great pathologic and diagnostic minds, doctors too generally have become nihilists instead of therapeutists. Recognizing a swelling in some part of the body, they put the question, How can it be removed without cutting it out? They seem to have lost sight of the fact that such conditions have existed from time immemorial, and that their forefathers contended with them oftentimes more or less successfully; or else recognized that it was better for the patient to endure the ills he knew of than to fly to dangers he knew not of.

Let the physician review his studies of etiology, diagnosis and therapeutics, and return to effort to perfect himself in these branches, and there will yet be left for the surgeon enough of special work to do. But let there be a stop to wholesale, reckless surgery—just to claim a victim as a subject of operation—successful as to the operation, but ruinous in its after effects.

The Southern Section of the American Laryngological, Rhinological, and Otological Society

Held an interesting meeting in Richmond, February 12 and 13, many specialists of eminence from the North as well as South being present. Papers—several of them of more than passing interest to the general practitioner, as, for instance, the every-day condition of "Taking Cold"—were read by Drs. D. Braden Kyle, Philadelphia; H. L. Myers, Nor-

folk; John Dunn, Richmond; T. W. Moore, Huntington, W. Va.; Francis P. Emerson, Boston; Chevalier Jackson, Pittsburg; J. A. Stucky, Lexington, Ky.; G. Hudson Makuen, Philadelphia; D. A. Kuyk, Richmond; John O. Roe, Rochester, N. Y.; J. A. White, Richmond; H. P. Mosher, Boston; T. H. Halstead, Syracuse; E. F. Ingalls, Chicago; J. L. Kent, Lynchburg; W. S. Bryant, New York; S. M. Smith, Philadelphia; H. S. Hedges, Charlottesville; W. C. Phillips, New York; H. O. Reik, Baltimore, and W. F. Mercer, Richmond.

Dr. John Dunn, Chairman of the Southern Section, presided at the various sessions, and he, together with the other two members of the local committee of arrangements, Drs. J. A. White and D. A. Kuyk, are to be congratulated upon the success of the meeting. A banquet was given at the Commonwealth Club at night, February 12th, and a luncheon was served the following day at Westmoreland Club.

The sessions of the American Society, which includes the membership of all sections, will be held in Atlantic City next June. The time and place of the next annual meeting of the Southern Section will be fixed then, and officers will be chosen.

Transactions of the Medical Society of Virginia.

Just as we are going to press, news comes that Gill Brothers, of this city, printers of the current annual volume of Transactions of the Medical Society of Virginia, have been burned out by a disastrous fire which totally destroyed the building of the *Richmond Evening Journal*, where they conducted their printing office.

Half a dozen or so manuscripts were lost, but it is likely that duplicate copies are already in hand, or may readily be obtained. Fortunately much type that had been set up was in another building, though a considerable amount was destroyed in the fire. This loss, together with the time consumed in getting work started again, will necessarily cause delay in issuance, but it is hoped such delay will not be lengthy.

Tri-State Medical Association of Virginia and the Carolinas.

The session held last week at Charleston, S. C., was a memorable one in the distinction of those in attendance, as also in the merit of papers read and discussed. The next annual ses-

sion will be held at Richmond, Va., beginning the second Wednesday in February, 1910. According to the custom of electing the President from the State in which the session was last held, Dr. LeGrand Guervy, of Columbia, S. C. was elected President for the current year. The newspapers of this section, by mistake, published the name of Dr. Joseph A. White of this city, as President-elect, which he asks us to correct, as, according to the custom of the Association above referred to, he was not eligible. He was, however, elected one of the Vice-presidents. Dr. J. Howell Way, of Waynesville, N. C., is the Secretary-Treasurer-elect, a position he most satisfactorily filled for several terms. Several of the papers read before the Charleston session have been contributed to this journal, for early issues.

Cannon Annex, Virginia Hospital, Richmond.

The widow of the late Henry M. Cannon, of this city, has erected an Annex to the Virginia Hospital, consisting of twenty-eight new rooms, as a memorial to her husband. The dedication services transpired on the afternoon of February 19th, Dr. Hugh M. Taylor receiving the memorial in the name of the Board of Directors. Oftentimes in the recent past, the already capacious hospital was so pressed for space that patients had to be declined. The addition of the "Cannon Annex," with its twenty-eight rooms will relieve the congestion, and give ample spaces for nurses, offices, etc. The architect, under the suggestions of the medical and surgical staff, has devised everything possible to meet the comforts of prospective patients. The advertisement of this Hospital in this issue, will show the list of surgeons, physicians, etc., composing the Faculties of the University College of Medicine, from which patients may select their professional attendant at the Hospital.

Obituary Record.

Dr. Samuel Davies Price

Died at Bluefield, W. Va., February 12th, aged 26 years. He is survived by his father, Dr. S. H. Price of Montvale, Va.; also by one sister, the wife of Dr. W. S. Slicer, of Cripple Creek, Va., and by two brothers, Drs. Will and Epps Price.

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Original Communications.

SOME OBSERVATIONS ON THE TREATMENT OF HIP DISEASE.*

By HOMER GIBNEY, M. D., New York, N. Y.

The purpose of this paper is to give briefly some of the methods of treating hip disease—which is a destructive disease of the bones which go to make up the hip joint, chronic in character, which terminates in deformity—as practiced in the centers of medical learning by the representative men.

In the hands of various surgeons for the past thirty-five years very many appliances, more or less complicated, have been and still are used, and, to use a phrase current then, “I have seen good results from all methods.”

Too much attention cannot be given to the early recognition of the disease, the exact location of the various foci, either in the acetabulum, the head or neck, the epiphysis or the shaft; and as we are now materially aided by the X-ray, we can determine more accurately the exact location of the process. We are, therefore, able to give a reasonable definiteness to the prognosis as to the amount of shortening and resultant deformity.

The mechanical appliances devised to maintain prolonged extension, with the consequent atrophy of the soft parts, as well as bone, were all modifications of the long splint. The cases treated thus recovered with shortening and deformity, and sometimes pathological dislocation.

Drs. Shaffer and Lovett's report of the result of cases treated by the extension apparatus many years ago led Dr. Phelps, of New York City, to employ a ring attached to the upright stem, encircling and grasping firmly the upper thigh, making an effort toward fixation at the

hip—one perineal support on the opposite or well or unaffected side.

The first effort at more neatly immobilizing the pelvis and diseased femur was the addition of a thoracic band to limit the movement of the trunk, attached to the pelvic band by an upright, laterally placed. I think I first saw this modification applied in Dr. Gibney's private practice, and it soon became the one of selection at the Polyclinic and the Hospital for Ruptured and Crippled.

We were striving then to immobilize the affected limb, believing that our results would show less shortening, limit the tendency to pathological dislocation, and prevent the flexion deformity, which is usually the fate of the untreated cases.

A perfect restoration of function is hardly to be hoped for; of the vast number of cases of hip disease, however well managed, nearly all recover with some grade of deformity.

At the meeting of the American Medical Congress in Philadelphia in 1876, such authorities as Lister, Gross, Sayre and Agnew expressed divers opinions as to the management of hip disease. Weights, pulleys and all mechanical appliances were freely criticized. Later, in Manchester, England, at a similar Congress, many views were expressed by William Adams, Erichsen, Thomas, Marsh, Sayre and McNaughton Jones.

The several appliances then in use were Bryant's splint, Sayre's, Thomas' and the extension apparatus, which is weight and pulley. The conservative method then was to put the patient to bed and apply the extension apparatus in the line of deformity, urging a well-lighted, well-ventilated room, or a bed in a ward in which these necessary adjuvants were to be found. Others reduced the attendant deformity under an anæsthetic at one seance and applied the readily made and easily adjusted splint, devised by Dr. Thomas, of Liverpool,

*Read before the Tri-State Medical Association of Virginia and the Carolinas, at Charleston, S. C., February 18, 1909.

which apparatus still bears his name and has many supporters; chief among these is his nephew, Mr. Robert Jones, of Liverpool, into whose quaint little attic—a part of his many-roomed offices—I recently found the old smith who had made splints and braces these fifty years past, but who now confessed to me with a tone of sadness that he was “making fewer hip splints than formerly.”

As opposed to the immediate correction of the flexion and adduction, under an anæsthetic, Dr. Marsh advised the gradual replacement by extension and counter-extension by means of the Fisher bed-rest.

There was a desire to gain motion at the ankylosed or fixed joint, and the bone setters then, or osteopaths, as they have come to be known, were called in and manipulated the diseased leg to such an extent that much damage was frequently done, although the articular surfaces may have healed.

The apparatus employed at the Royal Orthopedic Hospital in London to-day by the various attending surgeons is the Thomas splint, or an extension splint, with pelvic band—a high shoe, three inches in height, on the opposite foot, and crutches. Ward cases are put to bed and the deformities gradually reduced by weight and pulley.

The cases seen at the London Hospital and Charing Cross Hospital, under the care of Mr. Openshaw, who does considerable orthopedic work are treated practically in the same way by gradual reduction of the deformity and flexion; lordosis, by weight and pulley in bed, and later a long splint or Thomas splint.

A few years ago I had the pleasure of a few days with Dr. Lorenz, in Vienna, and observed his office and hospital work. He was then advocating and applying plaster-of-Paris, first correcting the deformity forcibly—sometimes with an anæsthetic, often without it.

Since then, of course, he insists on the immediate reduction of deformity, the application of a short spica, and leaves the first spica on one year, and he thus forcibly expresses himself as to its application and result in his latest article:

“I do not believe the usual extension method satisfactory, not that I question the value of extension, but that I object to the prolonged peri-

od during which extension is kept up, causing, as it does, atrophy and shortening.

“A permanent fixation dressing is recommended with scratches; it is not advisable to make severe correction under an anæsthetic because of the subsequent pain in the overstretched muscles.

“Again and again I have insisted that the first fixation dressing should be left on a full year, and after this dressing is removed ankylosis has taken place, with the minimum amount of shortening.”

During a couple of days spent in Berck Place, France, at the Rothschild Institute, I had occasion to observe the injection and fixation of Colot method, which he claims arrests the carious processes. He confirms his diagnosis by early X-ray, and begins at once his injection through fenestra in a well-fitting and moulded plaster-of-Paris spica.

I can do no better than quote from his recent work (*Orthopedi Indispensable*), giving the formulæ of the injection used:

“Benign cases.—Oil.....50 gm.

Ether25 gm.

Creosote 3 gm.

Iodoform 7 gm.

Fungous cases.—Glycerine (camph.) 20 gm.

Naphthol 3 gm.

“Injection should be made at the outset of the disease, first immobilizing the hip in plaster-of-Paris. Plaster-of-Paris has the advantage of lessening the local reaction of the injection.

“The advantage of early injection is that the total course of the disease is shortened to one year, about half the average duration, thus diminishing the atrophy.”

In Boston much attention is given to orthopedies and in the hospitals great importance is made of traction in the treatment of hip disease. The mechanical device used by Dr. Bradford and his assistants at the Children's Hospital is an inexpensive splint with traction attachment. The importance of traction in his opinion is emphasized in his recent article:

“Traction meets a pathological indication during the acute stage—that is, muscular spasm.

“When used it should be applied with the purpose of furnishing distraction; that is, checking undue bone growing, and when trac-

tion is employed better results are obtained than when it is not used during the course of treatment."

The Philadelphia apparatus has long been in use, such as a long splint with its many modifications of extension, traction and partial immobilization. These are now being largely discarded, and the short spica, with its many advantages, advocated by Dr. H. Augustus Wilson, gives many good reasons for employing the spica to the exclusion of other apparatus, a sufficient one being: "The spica method usually shortens the course of treatment and prevents the occurrence of ankylosis in an unfavorable posture. Incipient cases are the most suitable to the spica treatment."

In our work at the hospital for ruptured and crippled, where perhaps the largest number of orthopedic cases are handled, both as in-patients and out-patients in this country, the method insisted on by Dr. Lorenz has come to be the one we now employ as routine treatment.

In addition to the children cared for in the hospital proper are many whom we "farm out," so to speak, at country homes, seaside resorts and at city schools for the care of crippled children.

Many of these with tuberculous hips, wearing short or long spicas, applied at our dispensary, are able to get about comfortably in the country and at the seaside where, of course, the hygienic and sanitary surroundings and diet are the desirable assistants towards ultimate recovery.

Our method is, first, to be sure of our diagnosis, confirming it by the X-ray plates and instituting the plaster-of-Paris or spica treatment at once. The length of the spica is governed by the acute symptoms. Sometimes we find it necessary to enclose the leg down to the toes to overcome the pain and muscular spasm. Very often it is not necessary to administer an anæsthetic to reduce the flexion deformity.

A few years ago our foreman in the workshop kept an extra man at work to make up stems of various lengths with corresponding pelvic bands, which we could quickly apply; now there is no demand for them, and his attention is given to knee braces, spinal apparatus, long springs for cases of anterior poliomyelitis, and flat foot braces.

Interesting, too, is the testimony of one of the largest instrument makers in New York, who makes for nearly all of the orthopedic doctors in New York. He told me a few days ago that formerly in the summer he employed one man who was kept busy forging stems so that he could supply the doctors more quickly when they returned to the city from their summer vacation, but now he never or seldom had an order or an inquiry even for a hip brace.

The plan, then, to-day of treating the diseased hip, as practiced by men who see more of them than the general practitioner is with a plaster-of-Paris spica; it is easily applied, permits generous open-air treatment, is clean, requires little care, and the doctor who is managing the case is always confident he will find the leg in whatever position of correction he left it.

To illustrate, I present a short spica which I made before I came down; you will appreciate its advantages, I am sure. The lordosis is overcome and the leg is firmly held in abduction, etc. The intelligent mother is overjoyed that she is able to keep the "sick leg" clean and sweet with the aid of the "scratcher" placed anteriorly and posteriorly; thus the problem of bathing is solved.

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Calot-Orthopedic Indispensable.

H. Aug. Wilson—*Treatment of Tuberculosis of Hip Disease*.

Bradford & Sauer—*Treatise on Treatment of Hip Disease*.

31 West Thirty-Sixth St.

One teaspoonful of Valentine's Meat Juice dissolved in two or three tablespoonfuls of cold or moderately warm water never hot will often work wonders with a weak, irritable stomach, where there is need of an easily digested nutrient, stimulant and restorative food. It is especially valuable in phthisis, pneumonia and influenza.

NEURASTHENIA.*

By J. N. UPSHUR, M. D., Richmond, Va.

Ex-President and Honorary Fellow of the Richmond Academy of Medicine and Surgery, The Medical Society of Virginia, The Tri-State Medical Association of the Carolinas and Virginia, Honorary Fellow of the State Medical Society of West Virginia, etc.

In the discussion of neurasthenia, the writer is confronted at the outset by the almost unlimited scope of the subject, and realizes his inability to do it justice in the limits of a single paper. We must be content, therefore, if the end of making it practical and suggestive shall be attained.

Difficulty of diagnosis in the beginning of these cases is a serious handicap, and we grope for a longer or shorter time for a clear vision of the malady, and a true conception of the therapeutic indications for the appropriate remedies which will bring relief. So many phases may it assume, and so kaleidoscopic may be the manifestations in every direction, that it is a constant effort not to become discouraged and give up the fight.

Our hope of arriving at a clear conception of the case is to recognize certain cardinal symptoms which are always present, at least one or more of them are. Prominent among these is headache, a clavus, located on the top of the head, intense—feels as if some weight pressed upon it. If the neurasthenia be a sequel to the climacteric, the headache sometimes extends to the occiput and down the neck, indicative of the uterine origin. Itching in various parts of the body, very commonly of the scalp; numerous hyperæsthetic places scattered over the body, varying from a dull sensibility to acute pain; sometimes the sensation is characteristically lithæmic, burning and stinging in character, pointing to the suggestive causation of gouty conditions from nervous disturbances. The patient is sometimes subject to disarrangement of the co-ordinate function, inability to walk or stand, manifesting itself at irregular intervals and passing off in a short time. In men, following, as the malady does oftenest prolonged business strain, the outlook for entire recovery is far better than with women. It may take the form of extreme nervousness, insomnia, disinclination to exertion or grave digestive disturbances, the danger of which is

that it is attributed to other functional causes or organic lesion and consequent therapeutic error results. On exertion, patient is entirely fatigued. There is painful, localized muscular spasm. Knee jerks are at first increased, but if tested often, soon become exhausted—differing in this respect from the organic cause; they will return if reinforced. Other tendon reactions may at times be present and then absent. Patient is conscious of a sense of malaise, constant feeling of tire and exhaustion, complains of more or less constant vertigo, which usually follows exertion. Patient experiences pains and aches in various parts of the body—back, legs, areas of tenderness along the spine, changing from time to time; cutaneous hyperæsthesia and paræsthesia; vision is affected, use of the eyes causes vertigo, blurring and confusion of vision, and headache. The ocular muscles suffer, as do others in the body; there is impairment of accommodation. Adjustment of glasses in these cases fails to give relief, and there is aggravation of the symptoms because of the disappointment of expected relief. Tinnitus aurium is sometimes present, and hypersensitiveness of the auditory nerve makes the patient very intolerant of noises. Even taste may be perverted. Patient is unable to sustain prolonged conversation, or to concentrate the ideas; memory is unreliable, or rather patient supposes it to be, but when tested this often proves not to be the case. Self-confidence is impaired or lost; patient is irritable and sometimes emotional. Neurasthenics are prone to exaggerate symptoms and are always on the lookout for new ones. All sorts of mental fears possess them—of being alone in crowds, of impending danger to themselves or their families. There are disturbances of digestion, circulation, secretion and the sexual functions. Sleep is unrefreshing, disturbed by unpleasant dreams, and patient awakes feeling tired and exhausted.

I will not consume your time to speak of the pathology of this affection. Essentially functional, organic derangement found at autopsy is essentially secondary to prolonged and exhaustive neurasthenia.

Before discussing treatment, let me cite a few illustrative cases:

Case I. Merchant, giving exhaustive attention to business, which had proved very lucra-

*Presented to the Tri-State Medical Association of Virginia and the Carolinas, at the 11th annual session held in Charleston, S. C., February 16-18, 1909.

tive, suddenly seized at night, immediately after coition, with agonizing headache, pain located in top of head; intractable to remedies, only being palliated by them, increasing on exertion, or by attention to business; then such mental depression that there was danger of suicide. A visit to Europe and complete relaxation from business for a year restored his health.

Case II. A man about fifty-three, physician, who had been under the strain of exhausting and exacting professional work for more than thirty years, developed obstinate digestive trouble, intractable to treatment, insomnia, nervous tremor, inability to concentrate his mind, at mental effort, vague perversion of sensations. On examination, he showed a dilated stomach of five inches, almost complete paresis of muscular coat of stomach, great debility, and suffering from inanition. Under treatment by complete rest, lavage, electricity (faradism) and prolonged use of strychnine, after several months he was able to partially take up his practice again, but symptoms persisted for nearly eight years before complete recovery. Four years after the beginning of the attack careful examination showed that the stomach had returned to its normal size.

Case III. Woman of previously good health, mother of two children, labors normal, has been under observation for the past three years. Symptoms first manifested at climacteric, after cessation of flow, during process of equalization of vascular and nervous forces. At the outset she had some of the commoner symptoms of neurasthenia. Always she had the headache on the top of the head, extending to the occiput and down the neck. At one time there was disturbance of co-ordination; would suddenly lose power to walk, and would have to sit down for a time. Was averse to going into public or seeing people. All sorts of hyperæsthetic and paræsthetic sensations developed, with digestive disturbances, glycosuria, impairment of vision, spots on fundus of eyes, muscular disturbance of eye muscles with symptoms of eye strain. Adjustment of glasses afforded no relief; complained once that her "left eye felt like a glass eye" and inability to move it. There was vertigo at times, numbness in right limb, hypersensitive in the foot and heel, temporary hypersensitiveness over the nerves on the anterior forearm. During

this time (about two years ago) her daughter had a sharp attack of diphtheria, through which her mother nursed her most efficiently; no evidence during this time of special anxiety, or of any neurasthenic symptoms. Upon the recovery of the daughter the mother relapsed into her former condition. At times there was marked improvement when absent from home in the summer. Digestive functions normal. Patient has recently improved, is able to walk out moderately, sleeps well, is cheerful, and can use eyes better. She has had everything imaginable in the way of treatment—everything in the way of nervines and tonics, rest in bed, faradism, prolonged cold effusions, and friction to spine.

Case IV. A young married woman, German, had miscarriage last summer, was attended by midwife; had uterine hemorrhage for two months before seen by me; was relieved by divulsion and curettement. I was called to see her last September, could find no well defined symptoms. There were slight endometritis, obstinate constipation, digestive disturbance, urine abnormally acid, mental depression; latterly hyperæsthetic areas and pain developed on top of the head. Diagnosis in doubt for a long time; treatment unsatisfactory. I am satisfied that the case is a mild neurasthenia following the depression from the miscarriage and subsequent hemorrhage.

The cases I have cited represent all the walks in life and illustrate the difficulties to be encountered in treatment to which I referred in the beginning of the paper.

In the management of these cases, in my experience, the most difficult problem to overcome is the mental depression of the patient, and consequent discouragement, resulting in impairment of will-power and the difficulty of inducing them to help the cure by using it and to persevere in treatment. In no affection is absolute confidence of the patient in the physician more essential. Every case must be treated on its own merits. What will be beneficial in one case may prove very harmful in another. Good results have often been obtained by the rigid enforcement of the rest cure of Weir Mitchell, but this treatment will prove harmful to others. Life in the fresh air, freedom from household and business cares, radical change of environment, mental diversion, and occupation

along new lines, so as to get the patient, as it were, out of an old rut, are essential. The utmost care should be exercised in the matter of proper diet and sleep, procured by such means as do not risk the establishment of the drug habit, and such diet as is nutritious and digestible, without being excitant of a lithæmic tendency.

Many drugs have been used for the relief and cure of this affection, such as all of the bromides, singly and combined, preparations of phosphorus, in the form of the compound phosphorus pill, and zinc phosphide, sumbul, arsenic, assafœtida. In sexual neurasthenia strychnine, iron, cornutine, damiana, valerian—in fine, it would be unnecessary for me to recite the whole armentarium of therapeutics. It is, however, important to vary the drugs from time to time, as indications point out, and as tolerance of the one being exhibited seems to be established. Some clinicians object to iron, but while some cases may not be benefitted by it, yet it may be important in others. When anæmia is present it will prove beneficial, given in such form as can be most easily assimilated. The mineral acids, combined with strychnia and one of the bitter tonics are very useful. Alcohol, tea, coffee, and tobacco should be prohibited.

I have already referred to the use of strychnine, but I wish to emphasize more fully my opinion of its value, especially if the neurasthenia manifests itself most prominently in digestive disturbance. Strychnia is not only a bitter tonic, but tonic to the digestive system, more especially through the nervous system, by stimulation of vaso-motor nerves of the muscular coat of the stomach and bowels, thus quickening digestion and improving general nutrition. It stimulates the motor nerve cells of the spinal cord, cardiac motor ganglia, the respiratory vaso-motor centers in the medulla, and contracts the arterioles all over the body. The cerebral convolutions are not affected. It is my practice, after using other agents to come back to strychnia, and push it, in one-twentieth of a grain doses, three times a day for several weeks. The result is usually beneficial.

I am well aware how much has been left unsaid that might have been said, but if these cursory remarks shall be the means of stimulating discussion and new suggestion of means of cure, I shall be amply rewarded.

REPORT OF TWENTY-ONE HUNDRED AND THIRTY-THREE CASES OF PULMONARY TUBERCULOSIS TREATED IN THE ASHEVILLE CLIMATE FROM 1897 TO JANUARY, 1907.*

By JAMES A. BURROUGHS, M. D., Asheville, N. C.

At the Charleston meeting of the Tri-State in 1900, I presented to this Society a report of thirteen hundred and seventy-one cases of tuberculosis treated in the Asheville climate up to 1898; also, a resume of ninety-six cases previously reported to the North Carolina State Medical Society at Winston-Salem in 1895, which cases were treated in 1891 and 1892.

In this summary only cases will be reported from 1898 to January, 1907. My reason for this latter date is that no case of pulmonary tuberculosis should ever be reported as arrested or cured for at least two years after treatment has ceased. Cases reported as arrested or cured earlier than two years after treatment are unreliable and misleading, as I have heretofore stated before several medical bodies.

I have been specially requested to report this work by your Secretary, Dr. J. Howell Way, as well as by a large number of medical men from all parts of the country, who have spent hours and even days in looking over my records and observing the technic of my work.

As these patients have been entrusted to my care by physicians from every State in the Union, the Provinces of Canada, England, Japan, South Africa, Cuba, Mexico and several of the South American Republics, it is nothing but reasonable and correct that an account of the work should be rendered for the careful consideration of the physicians, especially as this report shows conclusively that a very large per cent. of properly selected cases of tuberculosis treated in a rational manner in the right climate do become arrested or cured.

Just here I wish to state that my paper presented at the Charleston meeting in 1900—Thirteen Hundred and Seventy-One Cases of Tuberculosis Treated in the Asheville Climate—did not include the one hundred and twenty-three cases treated with tuberculin. At the time, I gave my reasons for not using tuberculin further as a curative measure, which were in substance simply that I did my patients no good, but harm instead, with tuberculin. Drs.

*Presented to Tri-State Medical Association of Virginia and the Carolinas during the session at Charleston, S. C., February, 1909.

Knopf, Crile and other high authorities have since taken the same position. And they who are using tuberculin now are only using one-one-hundredths of the strength that was used in 1892 and 1893 when I administered it.

Tuberculin is only admissible as a conjunctival test in doubtful or obscure cases of tuberculosis in man.

These one hundred and twenty-three cases treated with tuberculin in 1892 and 1893 seemed to be as promising as the other cases, but none of them are now living.

I had an assistant, the late Dr. John Hodges Drake, who told me that he was given tuberculin regularly for eighteen months. Two years after this treatment by tuberculin ceased, Dr. Drake stated to me that out of sixty-three patients who were given tuberculin at the time he received it only one other was living.*

This report of twenty-one hundred and thirty-three cases does not include the cases formerly reported; neither does it give an analysis of the cases formerly treated; nor does it include patients who were taken on probation and treated for some thirty to sixty days, and then sent home or advised to try other climatic points, because there were no signs of improvement.

Some of these cases previously reported have died from other causes than tuberculosis, and some from the re-development of the trouble, and I have lost communication with many of them; still fifty-three per cent. of this number are yet living.

Of this twenty-one hundred and thirty-three cases, which have been treated during the last nine years in the Asheville climate, there are possibly eighteen hundred now living. This statement is made after the most painstaking care in research and in response to inquiries as to results and as to the condition of subjects.

The first factor in treating tuberculosis is climate; the second, food; the third, intra-pulmonary medication; and the fourth, internal medication.

By a suitable climate, I mean an atmosphere which is practically non-germ-laden, high and

dry; a climate that is opposed to sepsis. Just such a climate as exists here and at four other points, so far as I know, on earth. This statement is made advisedly after experiments on small animals. And, in evidence of the foregoing statement, I will cite the fact that during the last fifty days the veterinary surgeon of our State Board of Health has tested with tuberculin nine hundred dairy cows furnishing milk to Asheville. And only eighteen of the nine hundred cattle reacted to the tuberculin test. And no one of these eighteen cattle was home-bred, but imported. The home-bred cattle did not respond to the tuberculin test. It is obvious that these eighteen cattle were tuberculous before shipment.

At this point it may be a little out of taste to mention the fact, but I shall suggest to the North Carolina State Board of Health that we shall pass a law by our State Legislature prohibiting the shipment of any cattle into North Carolina which have not immediately before shipment been tested for tuberculosis. A test six months prior to shipment does not satisfy men who think. A very recent test is what we want.†

It is very conclusive to me that there is a kind of electrolysis—or something which so far has not been explained—existing in this atmosphere, that is opposed to the life of tubercle bacilli. The records of much observation upon this subject could be produced, which are in my possession.

The aseptic condition of a rarefied atmosphere is of pre-eminent importance in arresting a tubercular process. Indeed, it is doubtful if pulmonary tuberculosis can be treated successfully in any other climate than one similar to that described.

From my earliest attention to the tuberculous, which dates back twenty-seven years, my patients have been practically kept in the fresh air by day and by night.

While the patients are in rooms at night during the winter, the windows are kept wide

†It is an accepted fact that bovine and homo tuberculosis are practically one and the same.

There are points which I could give you regarding nodules in the lymphatics extending anterior to the spinal cords of fish, feeding from sewers used by the tuberculous, which would convince you that the tubercle bacilli can be transmitted—provided that the fish is not thoroughly cooked—just as the typhoid bacillus can be transmitted to the human being. I have an abundance of data concerning observations upon this point by actual experience, the correctness of which can be demonstrated by any one having the time and the inclination.

open at the top, except during the time of storm, and the heat is cut off from the rooms.

By day the patients are in the sun, resting upon the verandas in reclining chairs or upon cots. Those who have ceased having fever are instructed to take trolley rides or carriage drives. While driving they are at times fully two thousand feet above our modest little village. With patients who are having fever, exercise is practically prohibited.

All patients, not excepting the hemorrhage cases, are instructed to take from one hundred and fifty to five hundred deep, full inhalations daily. This deep breathing is never to be practiced inside of four walls, but always at some point in the open air, upon the verandas, or at the ends of car lines, where no dust is floating in the atmosphere.

This deep breathing dilates the collapsed air cells, gets more oxygen into the system, and reduces the bodily temperature.

The feeding of the tuberculous is of great importance. No matter where or under what conditions the tuberculous exist, the regime of diet should be observed, which should be subject to variation, according to the age of the patient and according to his digestive powers. The tuberculous should be instructed with the greatest care in regard to diet, so as to impress the patient in regard to the quality, quantity and character of preparation of every kind of food suggested.

The diet consists of cream, milk, eggs, beefsteak, breakfast strip and butter and salt ad libitum on everything. Without going into detail, I will state that an average adult should take daily one pint of cream, one quart of milk, twelve raw eggs, a beefsteak twice daily, weighing half a pound, several pieces of breakfast strip or bacon in the mornings in addition to the beefsteak, and not to the exclusion of the same, and two baked Irish potatoes as large as goose eggs, one potato in the morning and one at night. At the noon meal the patient should be permitted to eat roast beef, or any kind of game, poultry, fish, or anything else he wishes.

To tell a patient to eat a beefsteak twice a day is vague. He must be instructed as to quantity, quality and the manner of preparation. Fried beefsteak has no place in a tuberculous patient's stomach. The best cuts should be selected, fully one inch thick, and should be

broiled a third on either side, leaving the middle rare, and should be served in a hot plate.

When eggs cannot be taken raw—which is rarely the case—the patient should be instructed to have them poached, soft-boiled, or made into custards; but never fried.

The potatoes should be baked in their jackets in an oven at the right temperature, so that when cooked they will be light, dry and mealy. And they should be served immediately when sufficiently cooked. Then the potato should be removed from the jacket and well seasoned with butter and salt.

There is one point that I wish to express very emphatically, regardless of what physiologists say upon the subject of osmosis of the skin, and it is this: That my patients are rubbed on retiring with pig's lard. They are presumed to absorb a portion of a pound each week; at least a pound is rubbed in. The rubbing helps the poor muscles. The lard protects the skin from the vicissitudes of the weather, and a goodly portion of it is undoubtedly absorbed.

Bear's grease is preferable to pig's lard, as it is certainly more easily taken up by the skin. At one time I obtained twenty-eight hundred pounds of bear's grease from Canada, but have only been able to obtain it in small quantities since.

After forced feeding in the right climate, intra-pulmonary medication is the next adjunct of the greatest importance in the treatment of pulmonary phthisis. Indeed, I would not take a case of pulmonary tuberculosis under my care without administering intra-pulmonary medication. I have largely dropped the use of oil of cedar in intra-pulmonary treatment. Indeed, I do not use so much of the pine oil products as I once did. Yet, I still use glymol as a basis. I also use camphor in conjunction with the essential oils, when ulcerated bronchial glands exist. For a great many throat and bronchial ulcerations, I have of late years used much Keener oil as a basis in preference to glymol, with the most excellent and satisfactory results.[§]

At this juncture there is one point which I wish to emphasize: When a tubercular uvula exists, it should be amputated; and when tubercular tonsils exist, they should be removed;

[§]This is an oil which is procured from between the gray sands on Mr. Keener's farm in Pennsylvania, near Pittsburg. And, so far as I know, it is not on the market.

and all ulcerated points in the throat should be touched with the solid stick of nitrate of silver, and the larynx, when indicated, with a twelve to fifteen per cent. solution of nitrate of silver. These tubercular ulcers of the throat should be touched every day or every other day until they are entirely healed; and should then be watched forever afterwards.

It must be remembered now and forever that nitrate of silver of a sufficient strength is the only thing known to the medical world which arrests an ulcerated process of the throat. The other silver preparations have not proven so effective in my hands.

In giving intra-pulmonary medications, I formerly thought that from fifty to seventy pounds of pressure to the square inch was sufficient. After years of experience I feel differently, and think that from seventy to one hundred and ten pounds of pressure to the square inch should be used in administering the intra-pulmonary medication. It takes time and experience to give an intra-pulmonary treatment to best advantage to the patient.

I use in a DeVilbiss spray about two ounces of glymol, ten to twelve drops of creosote, possibly thirty drops of saturated camphor, ten to fifteen drops of saturated menthol, then to fifteen drops of oil of pine needles, ten to fifteen drops of apinol and ten to fifteen drops of terebene, which is given daily by intra-pulmonary medication.

I have had trouble in giving the foregoing combination in intra-pulmonary medication in exceptional cases, which, as has been previously stated, may have a cumulative effect, producing strangury in old men, and symptoms of threatening miscarriage, or even miscarriage itself, in young women. These misfortunes have not occurred for several years from the fact that I have been more guarded in such cases, because of unfortunate experiences.

Internal medication has consisted of creosote, cod liver oil, peptonate of iron and manganese, strychnine and codein, using the codein only when necessary to check cough.

As a routine, cod liver oil is given in one-half ounce doses three times daily, and to this cod liver oil is added by the patient or nurse from twenty to fifty drops of Morson's White Label creosote. This amount of the foregoing creosote never produces smoky urine. I have

found, as have others, that a few stomachs do not tolerate the cod liver oil, or creosote either; and in such instances I have given arsenic. I have frequently dropped the use of creosote for a time and given arsenic instead with the cod liver oil, with good results. Arsenic, when given as a substitute for creosote, is given to the point of toleration, and as a tissue builder, and not with a view to arrest the tubercular process, as with creosote.

Peptonate of iron and manganese, as put up by our best manufacturing pharmacists, is given in tablespoonful doses every three to four hours in a wineglassful of water.

Strychnine sulphate in one-thirtieth grain doses three times a day strengthens the heart action, tones up the nervous system, and partially drives away nostalgia, which gives you many points towards health. Nostalgia is a physical condition which is very hard to combat. It requires the best cheer of the physician and every little courtesy and attention that can possibly be given to drive away that longing for home and friends.

All sedatives have been discarded, except in case of an impending hemorrhage or when a hemorrhage exists.

Alcoholics have their place in the treatment of this dreaded disease but they should be used with reason and care, as they are only indicated in special cases. Not more than eight or ten per cent. of my cases are permitted to use alcoholics. And these cases are under the direct care of a nurse, so that the patients are under control.

I will now give you a synopsis of these twenty-one hundred and thirty-three cases treated. There are sixteen hundred and nine of the cases known to be living, and one hundred and seventeen cases known to have relapsed and died. Some of this number returned to me when suffering relapse after having been discharged with the trouble apparently arrested; but the majority went to other physicians. With the remaining four hundred and seven of the twenty-one hundred and thirty-three cases I have been unable to obtain communication, but they possibly retain a smaller ratio as to recovery than the other cases reported, because they were less intelligent than the sixteen hundred and nine known to be living.

The average gain in weight of these apparent-

ly arrested cases was twenty and three-fourth pounds. The greatest gain was one hundred and nineteen pounds; the least was three and one-half pounds, and the aggregate gain was forty-four thousand, one hundred and forty-seven pounds. The average gain in chest expansion was one and three-eighths inches.

Fellows, in submitting this report, I wish to state that the most painstaking records have been kept of these cases, which are an open chapter at my offices in Asheville to every physician who cares to look them over. The results of every examination made are recorded, and the names and post-office addresses of the patients.

Of course, all of the microscopical and analytical work of examining blood, sputum and urine has been done largely by my assistants, and also the greater part of the intra-pulmonary medication has been administered by my assistants, who have been the late Drs. J. C. B. Justice, J. H. Drake and J. H. Reynolds. Dr. Hastings Wyman, of Aiken, S. C., assisted me in this work one year. And latterly, Dr. J. E. Cocke of Asheville, N. C., and Dr. O. F. Eckel, of Edinburg, Ill., have assisted in this work.

Dr. C. V. Reynolds, of Asheville, N. C., has been associated with me in my practice for years, and formerly did much of the microscopical and analytical work, since which time he has had charge of my patients and office force when I have been absent.

I wish to give due credit to these men, each one being competent, industrious and faithful, and each one taking a real interest in the work. Without their assistance I could never have accomplished what I have in the treatment of tuberculosis.

In conclusion, I will state that no case of tuberculosis can be treated to the best advantage out of a good climate. And I wish to denounce the practice of States or municipalities treating tuberculous subjects when they have not the proper climate within their borders.

And further, I wish to state that an abundance of fresh air by day and by night, forced feeding, intra-pulmonary medication, and internal medication, as above described, offer the tuberculous the best chance for an arrest or a cure.

This little paper is simply a continuation of the 1900 paper presented to this body just nine years ago, and I trust that it may be received as kindly.

HYDROTHERAPY.*

By J. C. WALTON, M. D., Richmond, Va.

Hydrotherapy includes the application of water in any form from the solid and fluid to vapor—from ice to steam; externally and internally. Unfortunately, hydrotherapy is, in the lay mind, always associated with cold applications, and a prejudice or fear is engendered of taking cold, rheumatism, etc. The use of hot water as an aseptic in surgery, as a resolvent in gynecology and surgery, in gastrointestinal and catarrhal diseases, meningitis, rheumatism, etc., has shown it to be as valuable a therapeutic agent as cold water.

Water is the most flexible of all known remedial agents; and when we reflect that it can be used at temperatures ranging from 40 to 120 degrees F., and that a change of five degrees in temperature makes a marked difference in its effect, it is apparent what an enormous latitude is offered us in grading its effects on the human system.

The effects of water are due chiefly to its thermic and mechanical action and its irritating effects on the neuro-vascular cutaneous system. We have three methods of using water,—viz.: By changing the temperature, the pressure, and the duration of the application. When water is given under a pressure of from 20 to 40 pounds, its effects are very much enhanced and the reaction is very much more prompt and decided. Duration is also very important. Dip one hand into water at a temperature of 40 degrees for a minute, remove and dry it, and the skin becomes warm and red and feels pleasant. Dip the other hand into the same water for three minutes, remove and dry it, and the skin is cyanotic and the hand painful and some time elapses before warmth and comfort are restored. An important point is to avoid the effects of sudden shock, or *too rapid* changes from *heat to cold*. *These changes should be very gradual, and the attendant should see that good and prompt reaction is always obtained.*

In neurasthenia, anemias, tuberculosis, chronic malaria and a great variety of chronic diseases, a good simple home method is to stand the patient in a vessel of water at 100 degrees F., twelve inches deep and rapidly wash

*Read before Medical Society of Virginia at its thirty-ninth annual session at Richmond, October 20-23, 1908.

him with water at 85 degrees. Reduce daily one degree until down to 60. As soon as the skin becomes fairly red, less friction should be used, as the object is to *train the organism to produce its own reaction*.

The dripping sheet is the next step in this neuro-vascular training. With the patient standing in a vessel of water at 100 degree, a linen sheet, dipped in water at 75 degrees, is thrown, dripping, around him, enveloping his entire body. The attendant slaps and rubs him vigorously on the outside of the sheet; and on the parts that are reacting well throws basins of water at 65 degrees two or three times, still continuing the slapping and rubbing—shivering being avoided. The parts are then rapidly dried and rubbed until good reaction ensues.

One of the simplest and most useful of hy-driatic applications is the cold compress. To make a compress take two to four folds of old linen (cotton does not absorb or retain moisture well), measured to the size and shape so as to conform to the part to be treated. The compress is then wrung out of water at the proper temperature and is covered with a piece of flannel an inch larger in every direction. The linen covered by the flannel is snugly fitted to the parts. For changing, two sets of linen bandages and flannels should be provided.

I will briefly describe how to make a chest compress, as it is superior to all the other applications in pneumonia and all other inflammatory diseases of the chest. Cut three folds of linen of a size to fit the entire chest, from the clavicles to the umbilicus, with slips to fit in the axillæ, so as to reach above the clavicles and cover the shoulders. One of the linen compresses is rolled up and soaked in water at 60 degrees; is then wrung out and laid on the flannel bandage and applied close to the chest, and secured by safety pins on the order of a silk jacket. Change the compress every hour until the temperature is below 100 degrees, when it should be discontinued. The water in the basin should be renewed each time and the compress rinsed off in another water basin before it is rolled up, to insure cleanliness and asepsis, and thus prevent furuncles. Ordinarily, a temperature of 60 degrees is used.

In cases of stupor or delirium, a still lower temperature is used and a dash of cold water is thrown on the parts before the renewal of

each compress. In cases of nervousness, excitability and insomnia, a higher temperature than 60 should be used. When the cold or stimulating compress produces chilliness and the patient does not warm up readily, it is well to apply cold water with friction before using the compress. The throat compress is a very useful application in tonsillitis and pharyngeal inflammation. The Neptune girdle or abdominal compress is indicated in typhoid fever, gastritis, entero-collitis, appendicitis, peritonitis., etc.

As an antiphlogistic application in the early stages of congestion, cold compresses are indicated as long as the circulation is active and the color is good. When, however, the parts assume a cyanotic hue and leucocytosis has taken place then change to warm compresses to hasten suppuration, which is unavoidable. The cold compress *diminishes congestion, retards leucocytosis and emigration of the white cells*, while the *warm compress* has just the *opposite effect*.

Enteroclysis, or washing out the bowels by means of large and slowly injected clysters, medicating or cleansing the bowels, and for the treatment of shock, is one of the most valuable therapeutic measures we possess.

Irrigations with a double tube for dysentery is very valuable. They should be continued until the water flows clearly from the outflow tube.

In cases of intestinal obstruction, the intussusception is generally at the ileo-cecal valve, or the sigmoid flexure. *Start with a low pressure, just a trickle, so as to accustom the bowels to the pressure, as the object is to inject a large quantity of water*. The question of the temperature of the injection is important. Hare and Marti found that water at 65 degrees F., lowered the temperature of the body heat three degrees in thirty minutes; they also found that water at too high a temperature caused heat stroke, and recommended a temperature of 101 to 103 of saline solution. The writer has had the good fortune to relieve several cases of obstruction by this treatment.

Dr. Pyncheon reports a case of intestinal obstruction successfully treated by continued irrigation in a girl of fourteen, who had not had an alvine evacuation for three days and had been eating cheese, crackers, oranges and grapes and swallowing the seeds of the grapes,

and also chewing gum. The patient was anæsthetized and suspended head downwards over a chair. A fountain syringe was filled with water at 110 degrees and raised to the ceiling with a fall of thirty feet for an adult, as indicated by the experiments of W. E. Forest, who found that the intestine of the adult would stand a pressure of fifteen pounds to the square inch, while in the case of a small child the maximum pressure is nine pounds—the pressure from a column of water being one pound to each two and a half feet of elevation. The effect of the water was augmented by forcible abdominal massage, and two and a half gallons of water were thus driven into the intestine, when there was a violent gushing of water from the patient's mouth, about a gallon escaping in this way. The procedure was then stopped and when the patient was sufficiently recovered from the anæsthetic to be placed on a slop jar another gallon escaped per rectum. The girl recovered and had a normal stool on the second day.

The great American clinician, Austin Flint, in 1877, spoke of pneumonia as pneumonic fever and pointed out its analogy to typhoid fever. Their most striking similarity is that the chief point of attack in both diseases is upon the central nervous system and the resulting toxins. The great desideratum in the management of the pneumonic patient is to enhance further the resisting capacity and to increase the elimination of toxins. This is done most effectively by the judicious use of hydrotherapy along the lines indicated in the treatment of typhoid fever.

Numerous experiments by Winternitz, Baruch, Thayer and others, by making a blood examination before and after cold applications, have invariably found a large increase in the white and red cells and in the hemoglobin. This increase generally remained permanent, and occurred in all cases after cold applications, involving the entire body, with an increase in the blood pressure. Whether this blood increase is due to the improved circulation and the overcoming of conditions of stasis, thus equalizing the circulation and driving out the leucocytes in increased numbers into the blood current from the spleen, liver and bone marrow; or whether there is an increased blood formation from the improved metabolism, the clinical fact is strikingly manifest in the relief

of anemia and other conditions of lowered vitality and the increase in the cellular elements of the blood—the oxygen and carbonic acid carriers.

The exposure of the naked body to cold produces a decided increase of oxygen consumption, as does the use of cold water upon the body, and it also increases carbonic acid excretion. After a cold bath or douche, if reaction is good, respiration becomes deeper and more air enters the lungs. For this reason *all cold hydropathic applications* should be immediately followed by moderate exercise in the fresh air, as one of the main objects is to increase oxidation.

Brand and Baruch have shown that in typhoid fever it is the *toxemia that kills*, and the *patient's resisting capacity must be enhanced so as to enable him to overcome this toxemia, especially the damage to the central nervous and circulating centers*. Brand demonstrated long ago that the *cold bath was valuable*, not because of its *antithermic effects*, but by its *sustaining effects upon a crippled nervous system*; and that when properly used, is a prophylactic against all the lethal conditions which exist in typhoid fever. Brand taught us the *fallacy of treating temperature by the bath or otherwise*, and also taught us the *inestimable value of friction during the bath*.

In a recent interesting series of experiments by Professor Baruch at the Vanderbilt Clinic, as to the effects of hydrotherapy on blood pressure, especially in arterio-sclerotic conditions, the blood pressure was lowered by warm and raised by cold applications, careful tracings being made in each case by the sphygmograph and sphygmomanometer.

A number of physicians have requested me to state the essential differences between the Turkish and Baruch systems of baths. Several years ago I spent the night at a first-class Turkish bath establishment in Philadelphia, as I wished to get rid of a cold. Instead of relief, the cold became rapidly worse and I very narrowly escaped an attack of pneumonia.

When I began the study of hydrotherapy, I asked my preceptor, Dr. Baruch, his opinion of the Turkish and Russian system of baths. His reply was brief and characteristic. He said: "These systems of baths are all wrong in principle. The main objects of the bath are for its eliminant and tonic effects and for its

power to increase the oxygen carrying power of the red corpuscles, thus increasing oxidation."

It is manifestly impossible for a patient to increase his oxidation by breathing the air of a hot, illy ventilated room, saturated with effete and noxious material, and the blood will deteriorate instead of improve under such conditions.

Furthermore, the abrupt and sudden changes from heat to cold are liable to produce shock in delicate individuals, increasing the liability to colds and other troubles. To the business man the loss of time from being compelled to remain indoors for sometime after the bath is a serious objection.

The Baruch, or hot-air system, of baths for institutional work—this system of baths being modern and constructed on physiological and scientific principles—is, for health and comfort, in the writer's opinion, superior to all others.

The douche, dressing and hot-air rooms should be well lighted and ventilated, the air of the rooms being constantly renewed by a large exhaust fan.

The hot-air cabinets for elimination should consist of both steam and electricity, as the electric light cabinet, in addition to its eliminant, has powerful nutritional effects and, in cases of arterio-sclerosis, has a most happy effect in reducing and relieving hypertension.

The douche rooms should be provided with a Richter apparatus, as the experience of the writer thoroughly accords with that of Baruch and others—that the Richter is the only apparatus so far constructed that gives the operator perfect control of the temperature and pressure—and as the three cardinal tenets in hydrotherapy relate to the temperature, the pressure and the duration of the application, a good reliable apparatus is a *sine qua non*, and the best is none too good.

Next to temperature, pressure is an element of the most importance and it is desirable to have a pressure of from 10 to 40 pounds always available. A pressure of from 25 to 40 pounds gives a powerful water massage over the spinal and abdominal nerve centers, thus causing a most pleasing sense of exhilaration and a vigorous reaction—training the organism to produce its own reaction, and doing away

with the necessity for friction and manual massage.

With the Richter equipment any and every kind of modern hydrotherapy can be administered, and it is absolutely surprising what results can be obtained in the whole domain of pathology—the effects being tonic, eliminative and alterative. It is an ideal remedy when intelligently used, and as superior to ordinary drug medication as an arc light is to a tallow candle.

The Nauheim baths for old, intractable, dilated and weak hearts frequently relieve after all other known remedies have failed.

The perineal douche is specially useful for hemorrhoids and prostatic troubles; and in this connection I will briefly refer to the Bidet, which can be conveniently attached to a water closet seat. The Bidet should have a nozzle calibre of the size of a lead pencil and a sufficient force of water to excite a sensation of smarting or tingling. It can also be used as a rectal or vaginal injection. The Bidet should be movable by means of a handle so that the stream can be directed against the external genitals—the perineum, anus, or surrounding parts, and is indicated in any inflammatory disease of the lower bowel and outlet and of the genito-urinary system, external and internal hemorrhoids, prolapsus ani, and eczema of the margins of the anus.

It should be used twice daily—once immediately after stool and again before retiring for the night. Hemorrhoids will frequently disappear after this treatment. Agnew would never operate for piles without first trying the Bidet. In prostatic troubles, varicocele and atonic impotence in the male, and vulvar pruritus or vaginitis in the female, Dr. J. Wm. White prefers this method to all others, and says that if he had to discard all therapeutic methods but one, in that case, he would retain this one.

Of the different physical agents—hydrotherapy, electrotherapy, phototherapy, massage, hot air, etc.—each is exceedingly useful in its place, and they all have their well defined and distinct indications: and the intelligent physician should use the modality best suited to the individual condition, with due attention to the diet, rest, clothing, exercise and restricted medication and, above all things, avoid routinism.

"It is an erroneous habit of the physician

to trust entirely to experience in accepting a therapeutic agent. Hippocrates has said, 'Art is long; life is short; experience fallacious.' The Dark Age of medicine was the time when experience alone was the guide to practice. The brilliant achievements of modern medicine are coeval with the rise and progress of an enlightened pathology, and a therapeutics based upon the latter and upon a correct rationale of the action of the remedies applied."

"The superiority of the hot-air cabinet over the ordinary Turkish bath is evident. The patient is surrounded by hot air in the cabinet and, the head being free, he breathes cooler air. Not only is he thus enabled to bear higher temperatures, but he is free from the dyspnea which is so distressing to many in the hot-air chamber of the Turkish bath, and which is doubtless due to a defective supply of oxygen; the latter, being expanded by heat, is not breathed in sufficient quantity to fulfil its physiological function. If oxidation be the chief object of the hot-air bath, the cabinet bath must be far superior to the Turkish bath, because it permits a more abundant supply of oxygen as regards the temperature and thus facilitates oxidation. Besides, the patient is not subjected to the admixture of emanations from the large number of persons who often occupy the hot-air chamber simultaneously in the Turkish bath establishments."—"Hydrotherapy," Baruch.

I will conclude by reporting a few cases:

Case I. Mr. D., aged 45. Neuritis of sacral and lumbar plexus; suffering from rheumatism for years. Since July, 1907, invalided from sciatic neuritis; averaged three-fourths grain morphine daily; treated by physician, neurologists, osteopaths, etc. and paid the latter over \$100; came in a carriage for first two treatments, after that, on the street cars; in four weeks could look after his business and was practically entirely well in six weeks from beginning of treatment. Treatment: Wave current sparks, and later Baruch baths and massage. Entire and complete recovery.

Case II. Mr. B., aged 42. Was taken suddenly three months ago while at Atlantic City with sub-acute rheumatism. Lost forty pounds in three weeks. Synovitis in left knee; severe pain, ankylosis and hectic fever. His family physician was apprehensive of tuberculosis, as

he was losing flesh rapidly and had lost a brother from consumption. Walked with great difficulty on crutches. Treatment, hydrotherapy, electricity and massage; gained thirty pounds in thirty-five days; returned to his business after five weeks' treatment. Complete recovery. The case had every appearance of tuberculosis.

Case III. Mr. L., aged 65. Hypertrophy of the heart, apex beat in the axillary line; hypertension 195; large swelling over the epigastrium and transverse colon, which was diagnosed as an enlarged liver and blistered; patient fainted in the lobby; dyspnea distressing. The abdominal mass disappeared under wave current, twenty-inch spark gap, enemas and ol. ricini (fecal impaction). Heart relieved by high frequency current and Nauheim baths; gall bladder enlarged and distended with inspissated bile; improvement marked; apex beat is now in the nipple line and swelling and dyspnea gone, and general condition good.

Case IV. Mrs. A., aged 61. Arteriosclerosis; tension 180; thickened speech, headache, poor memory dull and apathetic; ten treatments; under treatment twenty-four days; high frequency currents and regulation of diet and habits; tension normal, and patient bright and cheerful.

Case V. Mr. C., aged 55. He had a severe injury in the lower dorsal region from a fall twelve years ago; pain in the back and occiput; tardy reflexes, low tension; neurasthenic symptoms, digestive disturbances, weakness and insomnia. Treatment, strychnine, wave current and Baruch baths. Vastly improved, all symptoms disappearing under two weeks' treatment.

Case VI. Miss S., aged 30; trained nurse. July, 1907, patient had a severe attack of cerebro-spinal meningitis of nine weeks' duration. Sequelæ a large, bony-like deposit on the base of the skull and the upper part of the spinal column and over the acromial end of the left clavicle with spasticity of the lower ends of the sterno-cleido muscles; neck very stiff and painful; movements very restricted. Treatment, wave current over parts and static sparks daily. Improvement prompt and striking. Patient's general health, which was much impaired at beginning of treatment, entirely restored and the deposits nearly gone, with disappearance of all pain and stiffness. The ab-

sorption of these large, bony-like deposits with removal of the spasticity of the muscles is very remarkable.

Case VII. Mr. J., aged 17. Rheumatic coxalgia. Was confined to room for three months with severe pain in the hip joint with the limb in splints, as his physician thought there were indications of hip joint trouble. Hydrotherapy and static electricity. Improvement rapid and constant so that he was able, after two weeks' treatment, to walk ten miles. General health much improved and his weight increased seventeen pounds in one month's treatment.

Case VIII. Miss J. Neuritis of both brachial plexuses, the musculo-spirals, the anterior tibials, and the, also the *contouraux*. Treatment, hydrotherapy, static electricity, resonator sparks and X-ray. Complete recovery under five weeks' treatment.

Case IX. Mr. B., aged 53. Rheumatic type four months ago. Was taken with pains in the chest extending to the arms and a tumor about the size of a large hen egg developed in the center of the sternum extending from the second to the fifth rib; slight discoloration; very painful on pressure and containing some fluid; difficulty in breathing, insomnia and severe pain in the left arm; pulse 120. Patient was unable to ascend the stairway, the symptoms simulating aortic aneurysm. Fluoroscopic examination showed an enlargement in the sternal line; X-ray ten minutes every other day, relief being noticed after the first treatment, and very marked after the third; with entire relief and disappearance of the tumor and all symptoms after the tenth treatment.

Dr. John B. Murphy, in the *Journal of Advanced Therapeutics*, lauds the use of the X-ray not only in tuberculosis of the bones and joints and of the spine, but has had most gratifying results in tumors of the cord, such as granulomas and other enlargements of the cord. He used the rays to relieve pressure, etc., painful symptoms, and reports some favorable results after the failure of tonics.

At this season when rheumatic and grippal troubles are prevalent, ammoniac and its combinations with salicylate of soda, with quinine, or with lithia, will be found useful in breaking up such conditions.

REMARKS ON THE TREATMENT OF WHOOPING COUGH—WITH A PLEA FOR A BETTER EXPERIENCE WITH ANTITOXIN.*

By STEPHEN HARNSBERGER, M. D., Catlett, Va.

A half-century and more has past with no improvement in the treatment of whooping cough. Belladonna was the text-book treatment in those early days and belladonna is the text-book treatment to-day. Belladonna is not the only drug used, but it is the only drug mentioned by every prominent writer on the treatment of whooping cough. Just to illustrate:

Niemeyer.—Belladonna, "a drug which has acquired a great reputation," but he does not recommend it.

Smith.—Belladonna, quinine, bromides and hydrate of chloral.

Strumpell.—Belladonna, quinine and bromide of potash.

Anders.—Belladonna, asafoetida and hydrogen peroxide.

Holt.—Belladonna, quinine and antipyrine.

Without a known specific cause there is not likely to be a known specific treatment. This we all admit. But is it a fact that we can do nothing to mitigate the distress and to ward off the unwelcome complications? In our present knowledge we cannot expect to do more than to lessen the severity of the cough, abridge the duration of the paroxysms, and prevent or control complications. If we do this we do much.

Holt says: "In all cases it is important to have the windows freely opened at night, unless bronchitis or broncho-pneumonia is present." Personally, I believe in the open-air in all cases. The lung involvement only accentuates the necessity for more air—air from out of doors and not attenuated by undue artificial heat. Whooping cough patients want oxygen—pneumonia patients want oxygen—they don't want CO². Artificial heat cuts down the oxygen in the air—eliminates the very thing these patients want. With pneumonia as a complication of whooping cough the patient should be put to bed and kept warm, if in winter, by heat to his feet and legs, and, if necessary, to his body, but there is manifest danger in artificially heating the air he breathes. The bad cases do better by changing the rooms they occupy.

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It frequently works well to have rooms for day and rooms for night. This affords ample time for airing and fumigating. This procedure benefits in two ways: (1) The air is kept pure and (2) the risk of reinfection is lessened.

The rooms should be large, and in winter sunny, but shaded in summer. The shade in summer helps to cool the air and tone the system.

The familiar clinical fact that the paroxysms always continue until the plug of mucus is dislodged indicates, in part, at least, that means should be adopted to modify the catarrh by allaying irritation and facilitating the expulsion of the adhesive secretion. This is especially demanded in the more intense form of the disease in order to ward off dangerous asphyxia, prevent convulsions, etc.

Anders speaks of the catarrhal and paroxysmal stages and, "these stages," he says, "are divisions of the symptoms worthy of recognition, as the treatment in the first is not appropriate to the second." The first stage is characterized by fever and a coarse, dry cough. Now, I have always thought and have likewise found that there was the place for ammonium chloride, as it lubricates the entire chain of mucous membranes from the external orifices above to the external orifices below. This simple moistening of the mucous membranes, especially above the diaphragm, gives comfort to the patient by moderating the cough, and is also very often attended by a fall of temperature. The paroxysmal stage is also commonly benefited by the same drug. In this stage the moisture created by ammonium chloride renders the mucus less viscid and consequently it is more easily expelled. Lung complications are less frequent and the whole course of the disease, it seems to me, is milder in every respect. Moreover, by facilitating expectoration as it does, many of the infecting micro-organisms must be ejected with the sputum cast off. If this is true, and I am sure it is, then the body fluids of the patient cannot be so highly infected. From a series of clinical observations I have grounds for the assumption that ammonium chloride is antagonistic to the life of these pathogenic germs, as well as to the pathogenic agent in pneumonia, and if I am right, then ammonium chloride has a rational basis for its further trial. Its antagonism to germ life is

possibly one reason why my whooping cough patients are so free of the complications which are claimed to frequently attend the disease. The increased flow of mucus from the nostrils under the administration of ammonium chloride must tend to, and most likely does, expel many of the infecting micro-organisms that have lodged there, and but for the beneficent action of this drug would enter the system and add to the existing infection.

To free the gastro-intestinal tract of the infecting germs naturally contained in the sputum swallowed, I prescribe calomel at night and purified petroleum during the day. The oil's soothing and antiseptic local action from entrance to exit must do good. It not only restricts the tendency to diarrhœa and ileocolitis, which is particularly liable in the hot months, but it aids in allaying and loosening the cough. Administered with equal parts of some reliable preparation of liquid pepsin, and perhaps a few drops of syrup of cinnamon, it is well liked and easily borne by children. The combination seems to restrain to some extent the tendency to vomiting. And even when pneumonia supervenes it is more manageable and runs a shorter course. Why? Because there is less disturbance of respiration, less inanition and less weakness. In other words, a greater resistance is established. It is natural to suppose that the easier the cough is made, the milder the paroxysms; and the milder the paroxysms, the less the danger of vomiting, hemorrhages, asphyxia, convulsions, pneumonia, or other complications.

Many years ago Nothnagel proved by experimenting upon animals that irritation of the tracheal and bronchial mucous membranes causes coughing; and found that at the bifurcation of the trachea in particular coughing fits may be excited as promptly and of as severe a character as those originating in the larynx. The adhesive secretion—that tough mucus, the accumulation of which provokes the attack, and the ejection of which ends it—is in the absence of specific treatment, the point that should concern us most. Every coughing spell is a new source of irritation to the mucous membrane of the larynx. There seems to be an interesting connection between the hereditary neuropathic tendency of the patient and the degree of gravity of the paroxysmal disturbance of

the disease. Perhaps there is, in the severer cases, an irritation of the nervous centers, as well as of the peripheral nerves. If a patient is left to himself the paroxysms are less frequent. There is a tendency, even in sleep, to imitative paroxysms; when patients are congregated in one room, as soon as one patient begins to cough the others cough. It is best to isolate each bad case, for if the patient be left quietly to himself, the paroxysms are comparatively less. All causes of excitement should be studiously avoided. Prophylaxis here, as elsewhere, should receive prompt attention. Whenever the patient manifests any symptom of illness whatever between the paroxysms, he should be carefully examined and watched for some complication. Sound sleep is nature's perfect restorative. Sound sleep diminishes the number of paroxysms, and as complications are, as a rule, in direct ratio to the number and severity of the paroxysms, sleep is at one and the same time prophylactic and curative. Make your patient sleep, and right here are bromides and chloral specially useful. Give full doses.

The utmost care should be enjoined in reference to the diet, which should be nutritious but bland. Feed the patient every time his food is vomited—some of it will stay each time. Liquid food is best. Bovine is unsurpassed where vomiting is excessive and nutrition and strength rapidly diminishing.

It is well to spray the mouth, throat and nose. The spray can do no harm and may do great good.

In conclusion: Perhaps as long ago as three years I read of where the paroxysms of whooping cough yielded promptly to the incidental use of diphtheritic antitoxin. In *American Medicine*, February, 1908, Dr. Deardorff reports twelve cases—ten cases in his own practice and two cases in that of Dr. Gayley. The apparent favorable results in these few cases are suggestive at least and should awaken interest in the further trial of diphtheritic antitoxin in the treatment of whooping cough and perhaps of other diseases incident to childhood. Hence, I urge you to try antitoxin in your bad cases and would be pleased to have you report your success.

Tyree's Antiseptic Powder is a most elegant and efficient antiseptic. It is convenient to carry in the satchel, and inexpensive for office work. Trial package free to physicians.

GALL BLADDER OPERATIONS.*

By E. M. MAGRUDER, M. D., Charlottesville, Va.

Operation upon the gall bladder is performed for various affections, as pus in the gall bladder, tuberculosis, malignant disease, etc., but the affection most frequently demanding surgical interference is gall stones, to which the scope of this brief paper will be limited.

A discussion of the anatomy and pathology of the gall bladder, with the details of the various operations upon this organ, is not intended, as this can be found more ably presented in the numerous text-books. My object is simply to offer a few suggestions pertaining to the choice of operation in cases of gall stones, founded upon a modest experience.

In the choice of an operation for any affection several points are to be considered, as danger to life, facility of performance, duration of operation, permanence of relief, etc., all of which must be taken into account in the selection of a curative measure. Of course, the prime object with every surgeon is to cure *tuto et cito et certe et jucunde* (safely, quickly, certainly and pleasantly), but there is great diversity in the degree of relief afforded even by surgical methods. This is none the less true with operations for gall stones, the cause for which is the frequent post-operative persistence of the etiological conditions.

The conditions that predispose to the formation of gall stones are:

1. *A reservoir* for the storage of bile.
2. *Concentration of bile*, due to maximum ingestion of liquids, maximum ingestion of food, and obstruction to outflow.
3. *A sedentary life* conducing to defective metabolism and elimination, incomplete emptying of the gall bladder, and sedimentation of solid bile constituents, with breaking up of this sediment into concretions of different sizes.

The ideal operation for any disease, not otherwise curable, is one that entirely removes the trouble and renders its recurrence impossible; therefore, in case of a multiplicity of operative methods for a given affection, that one should be chosen which gives the best promise of permanent relief without too much risk to life.

For cholelithiasis there are three operations that may be employed:

1. *Cholecystotomy*, which is incision into

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the fundus of the gall bladder, removal of stones and immediate closure of the opening. This procedure incurs the risk of leaving behind one or more concretions which would require subsequent removal.

2. *Cholecystostomy*, which is incision into gall bladder, removal of stones, and then suture of the edges of the incision to the margin of the abdominal opening, with the insertion of a drainage tube. This allows opportunity for the expulsion of any stones that may be left behind, with drainage in case of infection. The tube is used for several weeks and then dispensed with and the sinus allowed to close.

Both of these operations are open to the objection that after the closure of the wounds there exist the same conditions as before for the formation of concretions, and there is strong probability that a second operation and even a third will be needed. (See case below.)

3. *Cholecystectomy*, which is entire removal of the gall bladder. This operation not only rids the patient of the cause of the annoyance, but gives permanent relief by removing the facilities for recurrence. The bile, loaded with solids like muddy water, instead of being stored up in a sedimentation basin, is poured directly into the intestine and there disposed of without the means of further harm.

In my own experience, which is, however, a limited one, I have not found the radical removal of the gall bladder, as compared with the more popular operation of *cholecystostomy*, attended by greater difficulty, greater consumption of time, or greater risk to life, while the relief is absolutely permanent.

Case. Mrs. M., a naturally strong and vigorous woman, about 35 years old, was much reduced in health by cholelithiasis, suffering excruciatingly with frequent attacks of hepatic colic accompanied by chills, jaundice, characteristic pain and soreness, clay colored stools, biliuria, etc.

Cholecystostomy was performed and a large, irregularly shaped concretion removed, followed by the expulsion of much gritty matter during the drainage period. There was perfect relief for about three years when the symptoms returned and the suffering was as great as before. The same operation was performed, but the presence of a great amount of adhesions made it very difficult to find, and impossible to remove,

the gall bladder, from which, however several stones were extracted and one from the cystic duct. After two years of comfort and well being the patient was affected as before and was anxious for another operation. She was warned that it would be undertaken solely on account of her miserable condition and that it offered only a forlorn hope with great risk to life. She preferred the risk to a life of torture.

When the abdomen was opened a third time a perfect wilderness of adhesions was found, from which it was impossible to differentiate the gall bladder. Far back under the liver towards the posterior wall, however, after a great deal of difficult manipulation, two hard masses were felt with the finger, one of which was removed. Repeated attempts to dislodge the remaining stone proving futile, and the intestines having already been seriously damaged, the wound was closed with drainage, but death occurred within twenty-four hours.

This experience with the more popular operation of *cholecystostomy* has militated with me vastly in favor of the more radical operation of *cholecystectomy*.

HEMLOCK AND CANCER.

By WILLIAM WAUGH, M. D., Chicago, Ill.

The house of medicine swarms with the unburied ghosts of countless therapeutic ideas which have been presented and, neither proved nor disproved, remain forever to perplex the practitioner. This is why such ideas seem to be immortal. Even though their falsity is fully demonstrated the knowledge of this penetrates not far and is quickly forgotten. So we constantly see these errors re-appear, notwithstanding the most complete and unquestionable demonstration of their fallacy. But it really makes little difference whether the idea has or has not been proved erroneous, or in fact whether it is true or false. It never dies.

Take the question, Does *cicuta virosa* cure cancer? Originally asserted by Stoerck, there has never been a satisfactory demonstration, or if there has been one it has been forgotten. Does hemlock cure cancer? Does it not? Do you know? How do you know it? If not, what is it that hemlock does that led Stoerck and so many other clinical observers to make such a claim? For we may safely say that every popular belief has something behind it—

every phenomenon has a definite cause, which is to be recognized, weighed and estimated as well as every other phenomenon.

Consulting the current works on Therapeutics we find that most of them repeat the statement that the pains of cancer may be assuaged by local applications of hemlock. Stille remarked that "able practitioners held that the discutient and resolvent powers of hemlock were well established by clinical experience." John Uri Lloyd says that it alleviates pain and undoubtedly affects mammary tumors, even scirrhus. Most of the other therapeutic writers state that poultices of hemlock leaves relieve the pains of cancer.

The scientific development of cichta therapeutics has been rendered impossible by the unreliability of its preparations. No member of the materia medica has been so notoriously variable and disappointing. The extract used to be a good, harmless excipient for pills in the days when I employed it. *Succus conii* occasionally proves active; the fluid extract occasionally deadly. The chief active principle, *coniine* or *cicutine* is volatile, and the only really stable and uniformly active preparation yet presented is its hydrobromide. The only objection to be made against this is that it is an "alkaloid." In all other respects it is satisfactory, affording the really useful properties of the plant in a manageable form, enabling the therapist to administer it with scientific precision.

Burggraave pronounced this salt effective in relieving the pains of cancer. He administered it for this purpose internally, in doses of a milligram every hour until the pain was relieved. Cicutine hydrobromide is a safe remedy, being rapidly absorbed and speedily eliminated by the pulmonary and cutaneous surfaces, thus preventing all danger of cumulation. Martin-Damourette and Belvet suggested that cicutine can prevent, arrest in their incipency, and check the development of the neoplasia by which the great diatheses reveal themselves, including in these the cancerous, which this remedy combats in the formative stage.

Cicutine hydrobromide was introduced by Mourrit in 1876. It contains 60.7 per cent. of cicutine and exactly represents all its qualities, therapeutic and toxic. It is stable and is not irritating when administered hypodermi-

cally. Guttman found that solutions of cicutine caused local anesthesia, after some irritation. VanPraag found that a part is eliminated by the urine and part by the lungs, while Huesemann concluded that a part is broken up in the body.

Not only in Athens, but in Massilia and in the Island of Cos, conium was employed to dispose of criminals. Valerius Maximus tells us that in the former this drug was administered to those who had received from the Senate permission to end their lives. Aelian reports that, in Cos, banquets were given from time to time, at which the aged and those who desired to quit the world committed suicide in public. The principal dishes were poppy heads and hemlock. A law of Cos provided that all who reached their sixtieth year should drink hemlock, so that Osler was not the originator of this suggestion. In the initiation of neophytes to the Eleusinian mysteries the hierophant rubbed their genitals with the fresh juice of the hemlock to insure against any possible breach of the vow of chastity.

VanRenterghem limits the benefits of cicutine to the relief of spasm and of pain. It is to him simply a palliative for certain concomitant symptoms of cancer. VonSchroff, in the *Lehrbuch der Pharmakologie*, 1873, said: "In a case of inoperable cancer of the breast with involvement of the axillary glands, I have witnessed the cure of very extensive carcinomatous ulcerations and the arrest of the malady after the employment of conium for many consecutive weeks."

Laura says: "If we cannot believe cicutine capable of curing really cancerous affections, or of resolving cancerous degenerations, it serves at least to diminish the part of the tumor capable of resolution the concomitant engorgements and obstructions secondary and collateral. If it cannot directly ameliorate the diathesis, in small doses by inciting the digestion and assimilation, by its happy influence over the organic changes and by its hypnotic action it can be utilized as an excellent modifier and an indirect restorer of the organic forces of life." Besides this, it relieves the terrible pains of this malady, and by this conserves the vitality, preventing the pain, the loss of strength, the malassimilation, the insomnia, the disorder of nutrition, the febrile element, and the discour-

agement, all of which hasten the end. In such conditions, when we are depressed by our inability to cure, cicutine appears as a veritable benediction, a remedy a thousand times more efficacious, prompt and well tolerated than the most vaunted calmants, without excepting any of the famed alkaloids from opium. But, one must not depart from the rules of right dosage, for huge doses at once or too closely repeated may ruin the life of the nervous centers and the assimilative and vegetative life, and advance the final ruin of the organism.

There is here testimony enough to warrant us in claiming a place for conium in the treatment of cancers, a place that may possibly be enlarged by observation made with the definite, uniformly active preparation of the plant now at our service, when the dread inspired by the uncertain forms of conium formerly employed, and occasionally displaying tremendous energy unexpectedly, shall have subsided.

So new is the method of employing certain remedies and pushing them to the production of full effect that even yet we cannot feel that cicutine has been completely tried out. Looking upon it solely as an analgesant, it possesses powers that render it far superior to morphine. Cicutine should be administered internally and applied freely locally in the treatment of cancerous growths.

Correspondence.

CASES OF AN UNUSUAL AND FATAL DISEASE—WAS IT WORMS?

The following interesting report of cases was sent to the State Health Commissioner by Dr. S. R. Jordan, of Mine Run, Orange Co., Va., with request for suggestions as to what the disease was. The Health Commissioner, with the consent of Dr. Jordan, has sent the report to the *Semi-Monthly*. If any one has had a similar experience or can throw any light upon these cases, it is hoped that he will communicate them either to the *Semi-Monthly* or to Dr. Jordan.

The following cases, occurring in the practice of a neighboring physician in an adjoining county (Spottsylvania), and in which I was directly connected, may prove interesting.

The cases have puzzled us no little, and I hope to get some further light on them.

Thelma and May Coleman, colored, aged three and seven years, respectively, were taken ill December, 1908. Dr. P. was summoned on the 11th and, after examining patients found the following conditions: Temperature of 100 to 102, nausea with occasional vomiting, slight diarrhea, rather rapid pulse, no difficulty of breathing, no special soreness about throat, chest sounds clear. One of the children was running around in a room at the time Dr. P. was there, and neither appeared to be very ill. He pronounced it a simple disorder of the stomach and bowels, gave small doses of mercury to each, to be followed by bismuth and salol powders. On the following morning he started to see the patients, expecting to find both better, and on the wayside received a telephone message saying that both children died the night before—one at ten and the other at two—both dying so suddenly the coroner was called and a jury summoned for inquest. Dr. W. P. and I viewed the bodies. There was nothing unnatural about their appearance, no eruption, no swelling of glands of the throat and, in fact, nothing pointing to any special cause of death. As there was no suspicion or symptoms of poison and no history of ptomaine poisoning, we were at a loss to say what was the exact cause of death. Postmortem was deemed unnecessary, and the children were buried.

On December 13th, Dr. P. was again summoned to this home to see a child in the same family, a girl nine years old, with symptoms very much like those of the two that had just died. Next day, December 14th, Dr. P. phoned me to meet him there in consultation. This child was found on the 14th with temperature of 104, slight tympany over bowels occasionally, weak and very rapid pulse (170) and an appearance of being very ill. There was no eruption on the body anywhere; slight reddening of fauces, tongue furred, expectorating occasionally a white, frothy substances; no cough, nor difficulty in breathing.

Dr. P. had given the day before two grains of calomel, which had caused no change in nature of the discharges, which were rather thin and offensive and of a yellowish cast. Mother said child had thrown up or passed per rectum six or seven round worms the day before.

We decided to give her calomel and santalin powders, one-half grain each, every hour until she had taken four powders, and follow with one-half grain of calomel powder every two hours until the stools changed. Dr. P. reported to me over 'phone next day that patient passed, the night after our visit, a large quantity of round worms, some eighteen or twenty, and was a good deal better. He called again on the 16th and 17th, and on the 19th discharged this patient, who was entirely recovered. While there on the 19th parents asked him to examine a boy aged twelve. This patient had a temperature of 103 and symptoms exactly like those previously described. He gave him treatment for worms as we had given the girl who recovered. On the 29th he found practically no change in the boy's condition. He had thrown up a few worms, but passed none; there was no change in the stools. On the 21st, about ten o'clock A. M., this boy died. Mother's description of death of all these children was that they just seemed to grow weaker until they died; no convulsions nor stupor.

I was summoned on 22d to hold autopsy, but owing to the great depth of snow we could not get there until 23d, two days after the boy's death. Body appeared natural except for ecchymotic spots; all internal organs, macroscopically, were normal so far as our knowledge went. No membranes or swelling in upper air passages. While running over intestines I noted small masses in the colon. One of these were opened and I removed therefrom seven or eight round worms which were all bunched together. Noticing that the appendix was unusually large and stretched, it was dissected out and amputated, a large worm being found embedded in its whole length.

No pathological specimens were saved. Dr. P., the physician in above cases, was so much horrified at the mortality following his practice in this family that he went over that day only to assist in autopsy. He failed to carry his medicine case, saying that he didn't propose to lose any more of them, and would refuse to practice should any more get sick. However, while we were there doing autopsy, the mother reported that a girl thirteen or fourteen years old was sick identically like the others—fever, slight congestion about throat, diarrhoea, etc. We advised her to give this

girl one-half ounce of castor oil with fifteen drops of spirits of turpentine, and follow with vermifuge. That night she passed twenty large round worms and made an uneventful recovery.

I forgot to say that after the death of the first two children the mother stated that they had been passing and vomiting worms at intervals for some time before she called in Dr. P., though she failed to inform him of the fact before he prescribed. Now, the question arises, were worms the sole cause of death of these three children, or, was it some malignant, contagious disease which we failed to recognize?

There were several other children in this family, including a nursing baby, who were not ill at all. Also, two very small grandchildren, who were not sick. During the brief sickness of the first two that died a good many neighbors with their small children came in to visit and sit up with this family, but no other cases were reported in the neighborhood. The children who were sick and part of whom died as reported above were mulattoes.

Could this possibly have been malignant scarlet fever, and, if so, why did the rash never develop on the three children who recovered? I know it is possible that death may have occurred before the rash appeared on the others. If it was scarlet fever, why did those who recovered do so immediately after passing large quantities of worms?

If it was scarlet fever, why were not the infants and other children attacked? There was no separation made. If scarlet fever, there should likely have been some sequelæ in those who recovered, but Dr. P. told me that he made a visit to this house no later than day before yesterday to satisfy himself and that there was no scaling, nor had there been, and the children were perfectly well.

If not scarlet fever, what could it have been? Certainly not diphtheria. Excluding these or any other contagious diseases we have any knowledge of, we did not know what else to think could have caused the death of these three children but worms, and if worms are so dangerous as to kill three children in one family in a space of less than a week and a half, then it surely is a very much graver trouble than we have been taught to suppose. The attending physician, a man of forty years' experience in general practice, has never seen anything like

it and he is a man whose judgment is unquestionable.

(Signed) S. R. JORDAN, M. D.,
Mine Run, Va.

Book Notices.

Surgery—Its Principles and Practice. By VARIOUS AUTHORS. Edited by WILLIAM WILLIAMS KEEN, M. D., LL. D., Emeritus Professor of Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia; and JOHN CHALMERS DaCOSTA, M. D., Professor of Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Vol. IV. With 582 illustrations, 22 of them in colors. Philadelphia and London. W. B. Saunders Co. 1908. 8vo. 1,194 pages. Cloth, \$7. net; half Morocco, \$8 net.

This volume deals with hernia, rectal and anal surgery, urinary examinations relating to surgical measures, surgery of the kidney, suprarenal gland, bladder—including calculi—prostate, penis and urethra, scrotum, testicle, spermatic cord and seminal vesicles, intestines (excluding appendicitis, rectum and anus), omentum and mesentery, appendicitis, ear and eye, military, naval and tropical surgery, and the concluding chapter is on the influence of race, sex and age in surgical affections. Thus it will be seen that this volume will be one of the most commonly needed of the entire series. The profusion of illustrations—both as to pathological conditions and in text descriptions of operations—add great value to the book, especially when the high standing of the authors of the different chapters is taken into consideration. The book brings each subject well up to date. References to a subject are readily made by the aid of the full index appended.

Diseases of the Genito-Urinary Organs and the Kidneys. By ROBERT HOLMES GREENE, A. M., M. D., Professor of Genito-Urinary Surgery, Medical Department, Fordham University, New York, and HARLOW BROOKS, M. D., Assistant Professor of Clinical Medicine, University and Bellevue Hospital Medical School, New York. Second Edition. Revised and enlarged. With 323 illustrations. Philadelphia and London. W. B. Saunders Co. 1908. Cloth, \$5; half Morocco, \$6.50.

This book comes to us as the combined production of a physician and a surgeon. While it cannot be said that anything specially new or novel has been brought out, proper emphasis throughout has been laid on that which ob-

servation and experience have seemed to teach to be best. Due attention is given to urethritis, both as to symptomatology and treatment; but syphilis is not systematically treated of. In fact, the book is devoted chiefly to other than venereal diseases, except as such diseases may be results of gonorrhea, syphilis, chaneroid, etc. In short, the title of the book well represents its scope.

Progressive Medicine—A Quarterly Digest of Advances, Discoveries and Improvements in Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M. D., and H. R. M. LANDIS, M. D. December, 1908. Lea & Febiger. Philadelphia and New York. 8vo. 333 pages. Per annum. Paper, \$6; Cloth, \$9.

This is practically a quarterly journal of specially prepared articles always by well selected authors. The four numbers a year well represent advances made in each of the specialties of medicine and surgery. It does not undertake to publish articles that are simply "fads" of the hour, but the articles are analytical and mark the true progress of medicine from time to time.

International Clinics—A Quarterly. Edited by W. T. LONGCOPE, M. D., Philadelphia, and several collaborators. Vol. IV. Eighteenth series. 1908. Philadelphia and London. J. B. Lippincott Co. 1908. 8vo. 310 pages. Cloth, \$2 per volume, or \$8 per annum.

This quarterly, each issue, contains articles in the form of clinical lectures by those qualified to teach. And, as far as practicable, the four issues during a year are made to cover the entire field of practical medicine and specialties.

Cataract Extraction. By H. HERBERT, F. R. C. S., Professor of Ophthalmic Medicine and Surgery, Grant Medical College, etc., Bombay. New York. William Wood & Co. 1908. 8vo. 391 pages. Cloth, \$3.75 net.

It is said that the country tributary to Bombay affords a peculiarly large number of cataract cases. The experience of Mr. Herbert in making extractions would seem to warrant the assertion that he is an expert in diagnosis and in operation. Technic is well given. Ophthalmic surgeons of this country may read the book because of the beneficial suggestions it contains with reference to cataract—its causes, diagnosis, management, etc.

Obstetric and Gynecologic Nursing. By EDWARD P. DAVIS, A. M., M. D., Professor of Obstetrics, Jefferson Medical College, Philadelphia, etc. Third Edition, thoroughly revised. Philadelphia and London. W. B. Saunders Co. 1908. 12mo. 436 pages. Polished buckram. \$1.75 net.

There has been a very large demand for this as a guide and text-book for obstetric and gynecologic nurses. It is correct and practical in its information, besides matters referring to asepsis and antisepsis, which is useful even to the obstetrician or gynecologist. The proper diffusion of knowledge, such as this book contains, would lead to the doing away with the old-time "granny," whose line of patrons can often be traced by the septic conditions following her work. Throughout, the illustrations are good. While there may be but little that is new to up-to-date doctors and nurses, it would be less than a duty discharged if we did not specially commend it for the uses for which it was designed.

Modern Medicine—Its Theory and Practice. In original contributions by American and Foreign authors. Edited by WILLIAM OSLER, M. D., Regius Professor of Medicine, Oxford University, England, etc., Assisted by THOMAS McCRAE, M. D., Associate Professor of Medicine and Clinical Therapeutics, Johns Hopkins University, etc. Vol. V. **Diseases of Alimentary Tract.** Illustrated Philadelphia and New York. Lea & Febiger. 1908. 8vo. 903 pages. Cloth, \$6; leather, \$7; half Morocco, \$7.50—each, net.

This great system of Modern Medicine, to be completed in seven volumes of about the size of this one, will long remain as the authoritative system. Each volume treats of diseases of special parts of the body—one volume or more, of course, being devoted to the infections. The author of each chapter has been carefully selected because of his known eminence and ability to treat of the special disease or diseases assigned him. The present, fifth volume, deals with a class of diseases that are, perhaps, more commonly met with in general practice than others and thus becomes one of the most useful of the series. Successive chapters, after an "introductory discussion on diseases of the digestive apparatus," take up, in order, diseases of the mouth and salivary glands; of the œsophagus, functional and organic diseases of the stomach, of the intestines, peritoneum, splanchnoptosis, enteroptosis, Glenard's disease, diseases of the pancreas, liver, gall-bladder and biliary ducts. The volume is well indexed.

Editorial.

Illegal Practitioners in Virginia.

From different portions of the State, there come complaints of practitioners who have not passed the Medical Examining Board of Virginia. A few, perhaps, have passed this Board fraudulently, in claiming to be graduates of reputable medical colleges. Such conduct has caused a number of doctors to write to us for protection. We are willing enough to render the profession all the help in our power; and are willing enough to expose the frauds when they come to our hearing properly vouched for. But we cannot act on simply a statement that "somebody" says that "somebody else" is practicing illegally.

The laws of Virginia, it would seem, are sufficient to render protection to every community. In the city of Richmond, members of the Academy of Medicine have been active in this direction, and while sometimes juries have peculiarly decided in favor of the law-breakers, in other instances violators of the law have been made to stop.

In cities, towns and counties throughout the State, where an individual doctor, cognizant of illegal practising, is unwilling to assume personal responsibility of reporting a case, the matter can be brought to the attention of the city, town or county Medical Society, which can act as a body. The case has then only to be reported to the Commonwealth Attorney, who, in due form, will prosecute the case before the proper courts.

License Commissioners are often the cause of much trouble in this direction. Some of them grant licenses without any proper inquiry as to the rights of the party to secure them. They should be entreated to be more careful. But even if the license is issued to unworthy parties, under false pretenses of preparedness, such licenses can be revoked, and the parties punished.

The State Board of Examiners, it is true, might here and there lend a helping hand in proper prosecutions. But the true remedy lies in the laws of the State as enacted, and, for the faithful carrying out of the same, reputable doctors of their respective communities are chiefly to be held responsible.

One of our correspondents refers to the fact

that the Virginia State Board of Pharmacy secured laws during the last session of the Legislature, which are being commonly observed, to prohibit the sale of certain drugs by ordinary country merchants. But parties without evidence of proper qualifications in some places secure licenses to practice medicine from the Commissioners of Revenue; or else, others undertake to practice medicine without any authority, and without knowing absolutely anything about it, and thus endanger the health and lives of people fully as much as the ordinary general country merchant who recklessly sells or dispenses drugs.

Virginia State Epileptic Colony.

At last the General Hospital Board of Virginia has an excellent location in Amherst county, Virginia, for the establishment of an epileptic colony. The site is the "Morris estate," about a mile and a half from Lynchburg, and covers about a thousand acres of land, specially well adapted for the purposes. The brick dwelling already on the property will well serve as the nucleus of the future buildings. Until more definite arrangements, the future of the enterprise will be under the direction of the Board of the Western (Va.) State Hospital—so far as the erection of buildings and getting the place in readiness for patients are concerned.

For several years, Dr. William F. Drewry, Superintendent of the Central State Hospital at Petersburg, has been intensely interested in this matter, and has given it assiduous attention. In each of the four State Hospitals are a number of cases of epilepsy that should not be associated with the insane. It is the purpose to commit such epileptics to the epileptic colony so soon as full arrangements can be made for them. It may be that unavoidable delay will be necessitated until the next session of the General Assembly so as to provide sufficient funds to carry out the initiative plans.

The epileptic colony, it is proposed, shall be a distinct State institution with a Board of Directors of its own, without special connection with any of the existing State Hospitals. Arrangements will undoubtedly be made also for private pay patients. The medical staff cannot be chosen until after the next General As-

sembly of Virginia. We look upon provision for this epileptic colony as supplying one of the long-felt wants of the State.

Dr. J. N. McCormack, Bowling Green, Ky.,

Chairman of Committee on Organization, American Medical Association, once in every year or two, makes a round of the States, urging, in lectures to the public and profession, matters that are regarded as of mutual interest to them. This month his itinerary takes in Virginia. Beginning March 22d, he will lecture twice a day—once to the profession and once to the public and profession—at Fredericksburg; on 23d, at Petersburg; on 24th, at Norfolk; on 25th, at Danville; on 26th, at Roanoke; on 27th, at Lexington; on 29th, at Lynchburg; on 30th, at Charlottesville; on 31st, at Staunton; on April 1st, at Harrisonburg; and on April 2d, at Winchester. Among the subjects to be spoken of at each place is urging the profession to take active interest in the affairs of public health, and also to point out the rightful claims of the profession of this State to have the State license taxes on doctors repealed. It is specially desired that he shall receive a proper welcome at each place he visits and that representative audiences of the public and profession will hear him. He will be accompanied in his rounds by Dr. Ennion G. Williams, of Richmond, Commissioner of Health of Virginia; at some places Dr. Stuart MacLean, of Richmond, and Dr. George A. Stover, of South Boston, at others—representing the Legislative Committee of the Medical Society of Virginia, each of whom will present the cause of the profession in asking for repeal of the State license taxes on doctors.

Dr. M. D. Hoge, Jr., Richmond, Va.,

Has just returned from New York City, where he has been spending some time, taking special and private courses on diseases of the heart and lungs, as well as advanced work in urinary micro-chemical analyses. His intention is to limit his practice to these specialties as far as possible. His many years of experience as a teacher of advanced laboratory methods is well known throughout this section, and we bespeak for him a still larger field of usefulness.

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Original Communications.

THE MECHANISM OF THE SECRETION OF THE PANCREATIC JUICE AND THE QUESTION OF HORMONES.

By THEODORE HOUGH, Ph. D., University Station,
Charlottesville, Va.

Professor of Physiology, University of Virginia.

Ludwig's discovery of the secretory fibres in the chorda tympani was soon followed by numerous investigations which established the close dependence of the salivary glands upon the central nervous system for the stimulus to their activity; but it was several decades before the mode of stimulation was equally clearly worked out for other glands. The brilliant work of Heidenhain and especially of Pawlow and his students has, however, given us a reasonably clear insight into the normal stimuli of the gastric secretion by showing that these are three in number: first, the so-called psychic stimulus which is excited by the presence of food in the mouth and even by sight or odor of food; second, the stimulation of the constituents of certain foods, notably the extractives of meat, as contained in bouillon, etc.; and third, stimulation by certain products of the pepsin—hydrochloric acid digestion of proteids. Of these the first acts only through the vagus nerve, which undoubtedly contains secretory fibers to the stomach. The second and third, on the other hand, are virtually as effective when both vagi and splanchnics are cut as when these nerves (the sole supply to the stomach) are intact.

It is not yet clear how these two latter stimuli produce their effect. Edkins* finds that, whereas an extract of the pyloric mucosa in a protein digestive mixture when injected into the blood evokes a secretion of gastric juice, injection of a similar extract of the cardiac mu-

cosa or of the "peptone" itself is without effect, and concludes that the products of protein digestion take up from the pyloric mucosa some substance which then enters the blood and there acts as a direct chemical stimulant as it circulates in the gland capillaries. Edkins' work is evidently influenced by that of Bayliss and Starling on the pancreas (*vide infra*) and is open to many, if not most, of the criticisms of the latter work, presently to be described.

In 1895 Dolinsky made the very important observation, now fully confirmed and universally admitted, that when acids are brought into contact with the duodenal mucosa, the pancreas immediately begins to secrete. It is also well established that this acid stimulus is independent of the connection of the gland with the central nervous system through the vagus and the splanchnics, although the work of Pawlow, and especially of Popielski, leave no doubt that a secretion of the pancreas may be evoked by stimulation of the vagus. Since, however, the stimulus of hydrochloric and other acids applied to the duodenal mucosa is effective when the vagi are cut, the conclusion was at first generally accepted that this stimulus acts through some nervous mechanism, either the ganglia of the solar plexus or through the intrinsic nerve plexuses of Auerbach and Meissner.

This point of view was attacked by the very important work of Bayliss and Starling,[†] which not only extended our knowledge of the mechanism of the pancreatic secretion but also introduced into physiology the new and promising conception of hormone action.

The more important experiments of these investigators are two in number. In the first, a loop of the duodenum below the opening of the pancreatic duct or else a loop of the upper jejunum was ligatured from the rest of the in-

*Edkins and Starling: *Journal of Physiology*, 1902, xxviii, 325; *ibid.*, 1904, xxx, 61.

*Edkins. *Journal of Physiology*, 1906, xxxiv, p. 133.

testine, in order to interrupt any possible nervous connection with the gland by the nerve plexuses in the wall of the gut; the mesenteric nerves going to this loop were then cut, while the arteries and veins were left intact. It was found that the injection of acid into the loop still caused an abundant secretion of pancreatic juice. Assuming that the operation had destroyed all nervous connection between the loop and the gland, the conclusion seemed justified that the secretion must have been evoked through the blood, either by the absorption of the acid itself or else by the absorption of some other substance upon which the acid had acted in the mucosa. Since the direct injection of the acid into the blood has no effect on the secretion, the latter supposition seemed to be the correct one.

The second group of experiments by Bayliss and Starling is the complement of the first and was assumed by them to establish the soundness of the conclusions they had drawn. Extracts of the duodenal mucosa in acid were filtered, neutralized, and injected directly into the blood; this was followed by an abundant and fairly prolonged secretion of pancreatic juice. Similar extracts of the mucosa of the stomach, the lower ileum, or of the large intestine, had little or no such effect; nor did the extract of the duodenum in water or other neutral fluid. It may be added that the injection of acid into the stomach, the lower small intestines, or the large intestine is virtually without effect on the pancreatic secretion; only when acid is injected into the upper small intestine, and especially into the duodenum, does it evoke a secretion from the pancreas.

Bayliss and Starling conclude from these experiments—and their conclusion has met with wide acceptance—that the epithelial cells of the upper small intestine manufacture a substance, *prosecretin*, which is itself inactive, but which is changed by the action of the acid, and especially by hydrochloric acid, into another substance, *secretin*; this is absorbed into the blood and there chemically stimulates the cells of the pancreas. To such substances they give the general name of *hormones*, meaning thereby a chemical excitant, manufactured by the cells of an organ, and evoking a specific physiological action either upon other tissues of the same organ or upon some other organ.

According to this view, events taking place

in one organ may excite reactions in other organs, not only through the nervous connections of the one with the other, but also by means of chemical stimuli carried from one organ to the other by the blood; and Starling suggests that this may, indeed, be the more primitive method by which co-operation of the various organs is secured, the nervous system being developed later in the course of evolution as the increasing complexity of organization rendered more accurate co-ordination necessary.

Such is the conception of "hormone" action. Obviously the general idea is not original with Bayliss and Starling; for, in a sense, the secretions of the thyroids and adrenals are examples of the same thing. Such "internal secretions," however, are usually being constantly manufactured by one organ for use elsewhere in the general nutritional processes of the body; the hormone, on the other hand, is supposed to be discharged upon the blood only when certain events take place in the organ where it is produced, and when so discharged it evokes a purposeful reaction in some other organ. Thus, in the case in point, the entrance of the acid chyme into the duodenum evokes a secretion of the pancreatic juice, the secretion which is to carry on the next chemical step of the digestive process.

Inasmuch as this "secretin" excitation of the pancreas is one of the few cases of hormone action which can be regarded at present as having strong experimental support, it is a matter of very great importance that the facts should be thoroughly tested. Within the past two years it has encountered very strong experimental opposition from Popielski,[§] who attacks the fundamental experiment of Bayliss and Starling on the following grounds:

In the experiment of ligaturing a loop of duodenum and evoking a secretion of pancreatic juice by the injection of acid into the loop after section of the mesenteric nerves, Popielski claims that when the loop, instead of being merely ligatured above and below, is completely severed by transverse section from the rest of the intestine and the mesenteric nerves to it are cut, the injection of acid does not evoke the least secretion from the pancreas, unless the acid is injected under sufficient pressure to dis-

[§]Popielski: Pflüger's Archiv., 1907, cxx, 451; *ibid*, 1907, cxxi, 239.

tend the gut; he also shows that the injection of water or saline solution under pressure has the same effect as the injection of acid. This he explains by supposing that when fluid is thus injected under pressure, movements of the loop are started, which, by mechanically moving adjacent loops, cause acid which they may contain to be spread over new surfaces and so introduce a new stimulus. He regards the experiment as proving that in the intrinsic nerve plexus of the intestine there is a means of communication between the loop and the pancreas, and that in Bayliss and Starling's experiment the ligature was not sufficient to destroy the conductivity of this connection.

Popielski then attacks the accuracy of Bayliss and Starling's observations upon the effect of injecting acid extracts of the duodenum and other portions of the intestinal mucosa. According to him secretion by the pancreas follows injections of extracts of the mucosa not only of the duodenum, but also of the lower ileum, the large intestine, and the stomach; it also follows injections of the acid extract of the muscular coat of the alimentary canal as well as of the mucosa; and it is similarly obtained by the injection of extracts of other organs and of the commercial Witte's peptone. In other words it seems that some substance or substances occurring in many organs of the body, when treated with acid, will cause a secretion from the pancreas when injected into the blood. They are not specific to the duodenal mucosa, as seemed at first. This naturally raises the question whether this "secretin" is, after all, the ordinary agent by which the pancreas is called into activity at the proper time; and the negative result of injecting hydrochloric acid into duodenal loops deprived of their connection with the pancreas not only by section of their mesenteric nerves but also by section of their intrinsic nerve plexuses speaks very strongly against the hormone theory.

Popielski also brings out certain important points with regard to the mode of action of these "secretins." He shows that all of them diminish the coagulability of the blood and cause a temporary lowering of arterial pressure, probably attributable to dilation in the splanchnic area; he also shows that their stimulating action on the pancreas is roughly proportional to these effects upon coagulability and arterial

pressure, whereas the secretion evoked by the presence of acid in the duodenum is unaccompanied by any such changes in the coagulability or blood pressure. Finally he shows that, whereas repeated injections of hydrochloric acid are followed by an undiminished response on the part of the pancreas, subsequent injections of "secretins" show a marked lessening of the effect on the second injection and generally no effect whatever on the third or fourth. He points out that it was probably for this reason that Bayliss and Starling failed to observe the "secretin" action of extracts of other tissues than the duodenal mucosa, the latter having been used first in their experiments in order to make sure that the pancreas would respond to the secretin stimulus.

On the whole, Popielski's experiments certainly throw grave doubt on the secretion or hormone theory of the usual stimulus to the flow of pancreatic juice, if indeed, they do not force us to return to the older view that this usual stimulus is through some local nervous mechanism which connects the duodenal surface with the pancreas, and which is excited to activity by the presence of acid in the duodenum.

INTER-DEPENDENCE OF PHYSICIANS AND SURGEONS.*

By J. ALLISON HODGES, M. D., Richmond, Va.

Clinical Professor of Nervous and Mental Diseases,
University College of Medicine, Etc.

Naturally, in assuming the affirmative of this subject, it is to be presumed that there must be some disparity that would call attention to such a question as the inter-dependence of the members of these two professions.

The science of medicine, as all know, embraces the science of the practice of medicine and of the practice of surgery. Unfortunately, it seems that in the growing extension of the science of medicine, embracing, of course, that of surgery, there has not been that close sympathy, that intimate co-operation between the two branches of the profession that are for the best interests of the advancement of the science of medicine *in toto*, and for the patients resultant. Now, if this be true, what is the cause of such a disparity?

Unquestionably, to my mind, it is largely

*Read before the thirty-ninth annual session of the Medical Society of Virginia, held at Richmond, October 20-23, 1908.

due to one factor in the development of the science of medicine, which, while it has probably done more to give us an intimate knowledge of certain lines of the science than anything else, yet has its serious disadvantages. What, then, is this cause? I believe that it can be summed up in the one word "specialism," and I believe, further, that when conscientiously and carefully and thoroughly understood and studied, specialism has as many disadvantages, probably more, than it has advantages.

What are some of them? One of them is the undeniable fact that men, unprepared by sufficiency of knowledge and ripe experience, rush too precipitately into the different specialties of medicine and, as a result, they are not prepared to cover the broad domain of the science.

It is also a fact that many of the specialists who go into the different branches, while they have added infinitely to our intimate knowledge of these branches, have, because of their limited study in a certain direction, become biased or, in other words, many of them have become "faddists," and can see nothing outside of their special line of work.

It is also true that there are many "specialists" who are not specialists, and it is not unbecoming in us, I feel, to caution the young men who go so largely and rapidly into the different lines, to prepare themselves well by a thorough study of the whole human anatomy and physiology, as well as pathology of the system, before they limit their work along definite lines.

Again, the physician, as well as the surgeon, naturally has not the ability nor the time to cover the broad expanse even of the field of medicine on the one hand nor of surgery on the other. What is the result? Naturally, you may have a splendidly equipped medical man and yet it is absolutely impossible for him to be skilled in surgical diagnosis. On the other hand, you may have a man highly skilled and equipped in surgery, in surgical knowledge and dexterity, and yet wanting in the broad essentials of the knowledge of the practice of medicine. Consequently you can understand very easily that if we wish to accomplish the best results there must be an inter-dependence between the physician and surgeon in getting the clearest diagnosis and, resultantly, the best lines of treatment for their patients.

It is a fact, too, that the one on the one side as well as the one on the other side becomes biased in his prognosis as well as in his diagnosis; and that oftentimes both the physicians and surgeons become nihilists to the therapeutics of the opposed party, as we may term it, and the physician thinks that the surgeon can accomplish nothing as the surgeon thinks very often that the physician can accomplish nothing. This is obliged to result in ill effects for the patient, who has certain well-defined rights for which we ought to have the sincerest regard. It is also a fact that neither one, as a rule follows the case from the bedside observations alone, say, to the operating room, to see whether his diagnosis is confirmed or not, or even sometimes to the autopsy table to see whether or not his diagnosis and prognosis were well founded. Surely then, unless we have co-operative work which is directed all along the line, and confirmed or not confirmed, we cannot be definite in our diagnosis, and we do not hear from the case in question as much as we should to guide our future treatment.

It is also true that these opposing ideas as to therapeutics held by the medical man and the surgeons lead, at times, to deplorable results, and often to chronic invalidism in a number of patients who could be saved that terrible wreck of their lives in the future. I need not pause here one second to dwell upon this, because it is too familiar to you all. I am able, however, to say this, that the exploratory incision, often of the operating surgeon, or the "horseback" guess of the practising physician, would be largely done away with to-day, if we recognized that the physician doesn't know it all just as the surgeon doesn't know it all; and that if they worked hand in hand and shoulder to shoulder for the best interests of their patients they would consult about these cases and not let the inevitable result which is noticable to me to-day follow. What is that? It is this, that in the great number of cases the patient himself these days is getting to be the diagnostician, and he is saying whether his case should be referred to the physician or to the surgeon. Now, I believe we are largely responsible for this very state of affairs. It has been frequently noticed, I am sure, by many of you that when the physician and surgeon work independently of each other, the diagnosis often of the same

cases, referred first to the one and then to the other, is different; hence the skepticism of the patient. Now, I cannot believe that if the true spirit of co-operation existed that this could be true, because if the medical man knows what he should know and the surgical man knows what he should know and each worked in harmony with the other, certainly it would be the same diagnosis in the same case. I believe we are led away too often by the fact that we wish only to determine whether it is mostly a medical case or mostly a surgical case. We are not after an exact diagnosis, and that you know, in the advancement of medicine, is what the specialists were created for and, acting jointly, should be able to secure.

Frequently because of the non-co-operation of the physician with the surgeon and the surgeon with the physician many of the most important details and facts bearing on the future of the patient as to operation or non-operation are neglected by the surgeon, especially when he overlooks the question of heredity, or when he overlooks the question of individual constitution, of which he can know but little when the case is new to him. When he overlooks, furthermore, the question of the individual temperament, which I believe every surgeon ought to be thoroughly familiar with, so as to know the resistant and non-resistant tendencies of his patient, he is culpable, for I believe that this method of rushing precipitately and hastily into an operation without all of these collateral antecedents which are of such importance to the future of the patient is as often unwarranted as it is unnecessary.

I am aware that laboratory methods in the advancement of our profession have taken a very high place, but I wish to say that from my experience laboratory methods unaccompanied by close clinical observation do not make diagnoses that are confirmed upon the operating table; and I repeat that we should not go mad with the idea that the laboratory tells us everything and that its methods are perfect, but should bring to bear common sense and sound judgment in our analyses of these cases. And besides, it is a fact that simple exploratory incisions are not as harmless as would usually be supposed. Many of you know that even exploratory incisions in certain diseases lead to metastases that are irremediable by the surgeon's

knife or by the physician's pills if that incision is left open even for a few days; and another thing, frequently these incisions direct a patient's attention to himself, which is unavailing to the patient and is, indeed, exceeding harmful in a majority of these cases. All of us will grant, I believe, that intimate pathological knowledge is absolutely necessary in the practice of medicine, and yet, I believe it is more important even to the surgeon than to the physician; and while I do not wish to condemn these researches or methods, yet I would urge that they be applied not only to the gross specimen, but to the microscopic specimen, and that final judgment should be made up upon the data elicited only when a well-balanced judgment has been brought to play upon them at the bedside.

I would add also that the question of the mental impression, both medically and surgically speaking, in many of these cases, when we make a wrong or inexact diagnosis, is of far more importance than we would ordinarily judge. In short, specialism often divides the responsibility and the patient suffers, for neither the physician nor the surgeon feels the interest nor the intimate desire to aid the patient, that both of them combined and working harmoniously together would do. What is the remedy, then? Are physicians and surgeons coming closer together in their work these days. Is either profession capable of treating alone many of the common diseases that come to us? Is it to the patient's best interest, in other words, that this state of affairs should be brought about? Unhesitatingly, I answer affirmatively, for there is often a woeful lack of similarity between the diagnosis of the physician and of the surgeon in the same case, frequently due to lack of a proper knowledge on the part of each as well as proper study of the case in question. The surgeon fails to study his case thoroughly beforehand, and the physician fails to follow his case to the operating table to see whether or not his diagnosis is confirmed by the incision of the surgeon.

I wish to mention very briefly in conclusion that the operative surgeon is, I believe, to-day passing out from being essentially an operative surgeon. The skilful diagnostic surgeon no longer operates for every tumor, benign or not, as it comes, because the tendency of modern sur-

gery is more conservative than ever before. Radicalism is becoming a thing of the past and is rapidly fading away before the greater and more exact knowledge of the surgeons of to-day. But I do say that because of lack of thorough study of the cases jointly many cases of ovariitis, abdominal neurosis and appendicitis, if you please, are operated upon when they are not those diseases, but are reflexes from some other cause. Furthermore, when we get this exact co-operation we will not make these mistakes, because we will then know, for instance, how much neurotic element there is and how much real pelvic pain. In other words, we can sort out and deal with the significance of pelvic pain and the physician can help the surgeon in his desire to be conservative and constructive and not radical and destructive.

In conclusion, I believe that all of us, physicians, wish and strive only for the best results for the patient, but in our desire to be onesided and all-powerful, as it were, we run off too much into specialties, and wander away too far from each other. We should come back and get closer together, both for our own and for the patient's benefit. Many a time the surgeon may make an anatomical cure, may remove a pathological lesion, but even then it is just as necessary and just as essential that the attending physician continue to treat the patient before a permanent cure can be effected. Please remember this, that many of these cases require not only the treatment of the lesion, medically or surgically, but also the treatment of the patient; and, to get the best results, we must have harmony, we must have co-operation, we must have united interest, both in diagnosis and treatment, on the part of both physician and surgeon.

THE OPERATIVE TREATMENT OF HYPERTHYROIDISM.*

By C. H. MAYO, A. M., M. D., Rochester, Minn.

Hyperthyroidism or over-activity of the thyroid is now considered the cause of a group of associated symptoms. A lack of definite or fixed pathology has aided the long delay in accepting the disease, hyperthyroidism, as the real condition, and the opposite of hypothyroidism.

The essential feature of the condition is that

the whole or a part of the gland only shows an over-activity from the cell changes. The laboratory findings correspond with the symptoms in the greater number of patients operated upon.

Several symptoms are prominent in the disease, two of which are closely associated—tachycardia and tremor.

The eye symptoms are peculiar to the condition. The eyes protrude greatly, or, because of the widening of the palpebral fissure, they appear to protrude (Stelwag). The upper lid lags on looking down (Grafe); the lower on looking up (Kocher). The extreme protrusion may cause diplopia for near work (Möbius). Sudden recession when fixing the eyes upon a near point has been noted.

Muscular relaxation is often a marked feature.

Intestinal symptoms are relaxation, diarrhœa, or loose bowel movement. Gastric crisis of a severe variety occurs, with but little warning.

Circulatory changes are marked in the increased frequency of the pulse and in the excess of blood in the capillary and smaller vessels; the pulse ranges from 110 to 200 or more.

Fatty liver and kidney changes become marked, with albuminous urine, edematous feet and limbs and ascites.

"The skin changes are increased feeling of warmth—sweating. When general toxic degeneration is present the skin becomes pigmented.

Hyper-activity of the thyroid may begin in early childhood. A moderate amount is not infrequent in girls at puberty. The hyper-activity is also noted of the normal thyroid during pregnancy.

The surgical treatment of hyperthyroidism must embody methods for reducing the secretion of the gland. Technic of operation should be chosen to fit the condition of the patient. In about two-thirds of the cases removal of the larger lobe and isthmus can be undertaken without undue risk. In extreme conditions, ligation of the vessel, as advocated by Wolfer, is advisable as a preliminary procedure. This operation we designate the *graduated operation for hyperthyroidism*.

*Original abstract of a paper read during the session of the Tri-State Medical Association of Virginia and the Carolinas, at Charleston, S. C., Feb., 1909.

The condition of unilateral exophthalmic goitre is treated by enucleation.

Technic—Ligation of Vessels.—A transverse incision is made in the skin-crease crossing the thyroid cartilage, and the wound is deepened to the gland between the omohyoid and sternomastoid muscles. Branches of the superior thyroid artery are secured at the apex of the lobe in a one-mass ligature which includes the superior veins, and in some cases a bit of the upper pole of the gland. The ligature material is linen.

Enucleation and Excision.—A transverse collar or Kocher incision is made. In cases of adenoma to be enucleated, the fibrous capsule is opened, the goitre exposed and incised to the depth of the adenoma capsule, which is enucleated, and the thyroid tissue closed with a locking buttonhole stitch. A temporary drain of rubber tissue relieves the tension.

Ordinary cases are treated by extirpation of the larger lobe with preservation of the posterior capsule of the gland, and the wound closed with subcutaneous suture.

The parathyroid bodies should be preserved as a guard against tetany.

The careful selection of the type of operation, the time, the preparation, and the after care of the patient has reduced the mortality to about four per cent. in the last 450 cases operated upon for hyperthyroidism.

Our experience has been derived from over one thousand operations upon the thyroid.

ANTITOXIN OR SERUM THERAPY IN THE TREATMENT OF WHOOPING COUGH, MEASLES AND SCARLET FEVER.*

By STEPHEN HARNSBERGER, M. D., Catlett, Va.

This paper is the complement of a paper read at George Washington University Hospital, November 14, 1908. I read that paper for three reasons:

1. To emphasize the fact that text-books, the general practitioner's main source of information, holds to the same treatment of whooping cough that was used a half century or more ago.

2. To suggest a modification in the treatment of whooping cough that not only adds to the comfort of the patient, but keeps down complications, and as the complications are the

usual causes of death in this disease, it lessens the mortality.

3. To impress the importance of a better individual initiative and to urge the profession to wake up to the probable good to be had from antitoxin in the treatment of whooping cough.

About three years ago I read of where an injection of diphtheria antitoxin in a whooping cough patient was followed by almost immediate disappearance of the paroxysms and a rapid recovery. This interested me. I read another such statement during the early part of last year and I determined "to wage an instant trial" as soon as opportunity favored me.

During the session of the Medical Society of Virginia in Richmond last October, I called to see Mr. Belt, representing the H. K. Mulford Company, as I wanted to know on what terms I could get diphtheria antitoxin for experimental purposes. Reporting our conversation to his Company, their Dr. Stewart wrote me promptly, offering me every assistance and help at his command. In my next letter I asked to be furnished with all the printed matter he could get bearing on the use of diphtheria antitoxin in the treatment of whooping cough and other diseases of childhood. In reply he gave me a letter of introduction to Dr. Henry B. Bryan, of Philadelphia; evidence sufficient that nothing of importance had been published on this subject. I wrote Dr. Bryan, telling him what I wanted, as it was my inclination to thoroughly study the action of antitoxin in such diseases. Dr. Bryan's reply was plainly to the point. He mailed me clinical experience and observation taken from his case records, and which I shall take pleasure in presenting to you presently.

In the meantime I mailed letters to a number of painstaking physicians requesting them to notify me of cases of whooping cough, measles and scarlet fever occurring in their practice, offering to furnish the antitoxin and my services free of charge. I was anxious to be able to add something to Dr. Bryan's statement of bedside facts; but the time has been so short in which to make my observations that I shall defer my personal report to some future meeting.

Dr. Bryan's report: "Antitoxin is a substance developed in the body, counteracting poisons generated or planted there.

*Read before the Tri-State Medical Association of Virginia and the Carolinas, at Charleston, S. C., February, 1909.

"Without at the present time going into any explanation why diphtheritic or any other specific antitoxin could be rationally of any benefit in the treatment of measles or scarlet fever, it may be of interest to some physicians to learn of some of my experiences in the use of diphtheritic antitoxin in the treatment of such diseases, while in charge of the children of St. Vincent's Home and Maternity Hospital of Philadelphia, Pa.

"As a reason for having used the diphtheritic antitoxin in scarlet fever and measles, it will be well to remember that it is generally conceded that the tissues and fluids of the body contain or at once manufacture antitoxin, the effects of which are directly antagonistic to the toxin of disease. The secretions thus formed are capable of protecting the body from invading bacteria and are distributed to all the tissues of the body and found especially in the serum of the blood.

"In the treatment of measles—a disease which Osler asserts stands third in the death-rate of eruptive fevers, and Holt speaks of as an epidemic in 1892 in the Nursery and Children's Hospital of New York, in which the mortality was 35 per cent., and in the nine thousand, three hundred and thirty-nine cases of measles in the Hospital of Paris, there were three thousand and ninety-six deaths—or a mortality of 33.5 per cent.

"In the year of 1906, in the history of St. Vincent's Home and Maternity Hospital an outbreak of measles occurred among our four hundred children. One hundred and seventy-one children contracted the disease, most of whom were under three years of age. This occurred in January, 1906. As each child showed the first symptoms of measles, five hundred units of antitoxin were immediately given. In this particular instance the deaths numbered twelve, most of which were from complications following the measles, principally pneumonia; in addition we had five case of cancrum oris, four of whom are now living.

"This death rate is far below any other similar outbreak we ever had, and I feel quite sure the antitoxin treatment was the alleviating cause, as in every other way the treatment was the same as in previous epidemics in this hospital.

"As to the use of antitoxin as a preventive

of scarlet fever, I will simply state a peculiar circumstance that rarely presents itself to the medical profession: In March, 1907, diphtheria broke out in our detention ward containing fifteen children. Two cases developed. I immediately gave each of the fifteen children five hundred units of diphtheritic antitoxin—the developed cases received three thousand units. The same day a child having been taken in the Home from the outside developed scarlet fever. On this account we were obliged to send to St. Joseph's Hospital for extra nurses, one of whom, Miss McK., arrived on Saturday. On Monday she was seized with vomiting, sore throat, fever and headache. On Tuesday she was covered completely with a most intense and typical scarlet rash. On account of having measles also in the detention ward, we were unable to remove the nurse to another building or hospital, and consequently she was obliged to be confined to a room adjoining the detention ward. Notwithstanding thirteen children were exposed to diphtheria and scarlet fever, as well as measles, not one of them contracted any of these last mentioned diseases, although they had been constantly exposed to them for three weeks.

"There can be no doubt the diphtheritic antitoxin prevented the spread of diphtheria. What prevented the spread of scarlet fever and measles?

"In as much as the horse by nature is immunized against the diseases of diphtheria, measles, scarlet fever, etc., I believe there is some rational therapeutics in using animal serum pure or after inoculations of different infectious diseases of which the animal has become immunized by such inoculations, and it is probable it would answer just as well to use the pure serum from an animal that is naturally immunized to any diseases to which man is susceptible and to depend upon the said natural immunizing power of the other animal to lessen the course of infectious diseases.

"Since preparing this article I have made some experiments with the use of pure horse serum in pertussis. The first upon my own son, aged nine, giving him ten c. c., the effects of which were very gratifying. The next experiment was an adult, Leonard A., with pertussis. History: Aged, 28; sleeps badly, ap-

petite poor, bowels all right, urine normal. Present illness, whooping cough.

"August 4, 1907, coughs every half-hour, with vomiting. Treatment 10 c.c. sterile horse serum. August 6, 1907, patient better, coughs every hour, no vomiting, headache after coughing. Treatment, 10 c.c. sterile horse serum. August 9, 1907, patient much better; rash on both arms, headache gone, coughs every eight hours. August 10, 1907, violent urticaria all over body. August 12, 1907, patient perfectly well and at work.

"Having satisfied myself of the safety of the treatment I awaited an opportunity to try it again, which opportunity occurred in October, 1907, in the form of pertussis at St. Vincent's Home and Maternity Hospital, Philadelphia, Pa., and to the service of my assistant, Dr. F. J. Webster, I am indebted for the following report of the result after the inoculation of ten c. c. of sterile horse serum to each of ten children under three years of age suffering with pertussis. (Copy of Dr. Webster's report.) St. Vincent's Home, 70th St. & Woodland Ave.

"The use of serum in the treatment of pertussis—report to Dr. Henry B. Bryan: Ten children in all received the treatment by serum. Seven were treated during the first three days after the disease. Three children did not receive the treatment till the third week of the disease. These three had pertussis of the most pronounced type; they moped in a corner all day, coughing and vomiting every hour or so, often expectorating bloody mucus. The children who received the treatment early in the disease were the most promptly benefitted. The paroxysms of coughing were rendered much less severe—they scarcely whooped at all, and vomited only once or twice a day. Some days there was no vomiting and their sleep was not disturbed by coughing after having retired for the night. Their appetites were improved and they were more cheerful and happy.

"Out of those seven children who received treatment early in the course of the disease only one developed urticaria. It was probably instigated by the serum and promoted by constipation. After receiving a dose of oleum ricini, it cleared up in a day or so, leaving the patient practically free from pertussis. The fits of coughing were very mild and the vomiting only a little mucus. The characteristic "whoop"

was no longer heard, improvement was continuous and in a week's time the patient was practically well.

"The children who did not receive treatment until the third week of the disease were not benefitted so much as those who received it earlier; one case did not seem benefitted at all; two were slightly benefitted. Four days after treatment one case developed urticaria, which promptly cleared up after receiving a dose of oil. On recovery from urticaria the whooping cough was practically broken. The paroxysms of coughing were less severe, and vomiting occurred once a day for a week. The child's health was improved in every way and she rapidly gained in weight.

"Ten days after treatment a second case developed urticaria. This was the only one of the lot who did not seem benefitted by the serum. The paroxysms of coughing were very severe and she frequently vomited food and bloody mucus. Once the rash developed, the whooping cough was practically gone. Improvement was rapid.

"The conclusions are obvious: The serum treatment is a benefit in pertussis, (1) it lessens the severity of the paroxysms; (2) it prevents vomiting to a great extent; (3) it improves the condition of the child so that she feels better, sleeps better and eats better.

"The only bad effect is the urticaria, which I think can be prevented by a dose of oil in from two to three days after administration of the serum."

"In reading over Dr. Webster's report, it should be remembered that these were institution children; and while we do everything we are able to do, they have not the physical or hygienic advantages of outside children. I think, therefore, our results are more convincing of the rational use of animal serum to combat diseases of which any particular animal is not susceptible."

Anaphylaxis: In closing, I wish to state that I am mindful of the danger that lurks in the hypodermic use of diphtheria antitoxin in the treatment of diseases other than diphtheria. While I have no personal knowledge of such deaths, and none are reported by Dr. Bryan, although he has given as high as fifty-five inoculations of diphtheria antitoxin to as many children under three years of age, suffering

with measles, in one afternoon, "that there is," says Dr. F. E. Stewart, "a certain amount of risk in injecting alien sera, owing to the fact that certain people seem to have been sensitized in some unaccountable way to horse serum, must be accepted as a fact."

The positive personal experience of Dr. Bryan rarely falls to the lot of one individual; and I am grateful, and I trust I do not presume beyond discretion, when I say that I think the members of this Association and of the entire profession should be grateful for this advance towards specific therapy in the treatment of whooping cough, measles and scarlet fever.

THE IMPORTANCE OF EARLY DIAGNOSIS OF TUMORS.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.

Professor of the Principles of Surgery and Clinical Surgery in the Medical College of Virginia; Surgeon to Memorial Hospital.

In a recent article on cancer, Crile made a statement that should be in the hands of every practitioner. He said it was unfortunate that any text-book treating of cancer should include glandular involvement and cachexia as symptoms of cancer, for when the diagnosis is delayed until these two symptoms are present, operation is useless. With the excellent records attained by early diagnosis and radical operations along pathological and anatomical lines, it seems truly unfortunate that the impression should even now be quite prevalent among the intelligent laity that cancer is an incurable disease. This can hardly be wondered at, however, when a great many of the medical profession still seem to be of this opinion. It needs merely a glance at a large series of statistics on malignant tumors in any portion of the body to show the rapidly rising death rate from recurrence with every week's delay in diagnosis and treatment. Cancer of the breast, for instance, which some prominent surgeons of the past generation claim never to have seen permanently cured, furnishes at present a conspicuous example of patients who may be cured if an early diagnosis is made and a radical operation performed. In the early stages of cancer of the breast, before the skin has become affected, and before the muscles

have been infiltrated or glandular involvement has taken place, permanent cures by radical operation in the hands of a competent surgeon are over seventy-five per cent.; when the skin has become involved this percentage is decreased. It is still lower when involvement of the axillary glands has taken place, but even then a sufficiently extensive operation, by removing the glands and tissues in one mass, will cure between 15 and 20 per cent. of the patients. When, however, the supraclavicular glands have become involved, cures are so rare that it is hardly advisable to operate.

Taking for a basis of cure the absence of recurrence for three years after operation, we see in cancer of the breast cures drop from upwards of 75 per cent. down to zero, and this difference depends entirely upon whether the diagnosis and operation are made early or whether they are delayed. These are facts, proved by a large series of cases and are not mere theories, but it is what we would expect from laboratory and clinical studies of cancer. What is true of cancer of the breast is practically true in other organs of the body. The squamous cell cancer about the face can be readily removed under a local anesthetic with almost a certainty of cure if taken in time; but when it is neglected, when glandular involvement has taken place, it becomes a most serious disease, requiring extensive dissection for eradication, and even then results show a comparatively small percentage of permanent cures.

As important as it is for the surgeon to recognize the pathological conditions that he sees, whether at the operating table or in the laboratory, it is impossible for him to secure satisfactory results unless the family physician urges upon the patient the necessity of prompt surgical relief for every tumor, and ceases to wait until the diagnosis is so plain that a layman can make it. It is as much the duty of a physician to educate the people along a general hygienic line as it is to cure their maladies, and he should lose no opportunity of impressing upon his patients the importance of seeking medical consultation whenever any tumor or new growth is discovered. If the people could be taught, and have the fact impressed upon them, that cancer in its early stage can be cured, there would be countless lives saved each year instead of the numbers of patients

*Read before the Southside Virginia Medical Association, Lawrenceville, Va., March 9, 1909.

who are turned away from every hospital with no prospect for the future but a lingering death because their disease had advanced too far for operation. The earlier the diagnosis is made in cancer the more difficult is the diagnosis, and the more skill is required in making it, but the more hope of a permanent cure. Therefore, no patient with a tumor should be permitted to "wait to see what will happen," nor should the patient ever be advised to delay consultation for further developments if there is the slightest suspicion of a possibility of malignancy. Only too often further developments show the diagnosis so plainly that the golden opportunity for a cure has passed.

It is not the purpose of this brief paper to go into points of diagnosis of any tumor, but to warn against waiting for glandular involvement, cachexia, and loss of flesh to establish a diagnosis, and, further, to call attention to one feature always found in the early stages of all malignant tumors; namely, *the absence of pain*. I have seen patients with their breasts fixed to the chest, with extensive glandular involvement, who would say they "had noticed a lump in the breast for a number of months, but paid no attention to it, as it did not hurt, and they thought pain was one of the chief symptoms of cancer." We all know how common a thing it is to discover cancer of the intestine when operating for obstruction where the lumen of the bowel has been almost completely obliterated, and yet the patient never complained of pain before the acute obstruction. The presence of pain in cancer is always a late symptom, and due to extensive involvement of the tissues. Almost without an exception, pain is never present in the early stages of any cancer. If we could induce our patients to believe that the presence of a rapidly growing mass without pain is more serious than a painful swelling which is accompanied by a red, angry condition of the tissues, we would accomplish a great step forward in lessening the mortality rate of cancer. It seems unfortunate that cancer is so free from pain in the early stages, because if accompanied by pain the patient would be driven to seek relief when operation would offer the greatest hope of cure.

The responsibilities upon the surgeon are to make a diagnosis as soon as he sees the patient, to be able to recognize the pathological structure of cancer, both under the microscope and

at the operating table (thus giving the patient the benefit of his pathological knowledge while operating), and to perform an extensive radical operation. The surgeon cannot secure satisfactory results when the patients are brought to him in an advanced stage of the disease. So an even more important responsibility rests upon the physician to teach patients to come to him on the earliest suspicion of any tumor or any new growth, and to teach them that cancer in the *early stages can be cured by operation*; that it is always fatal when untreated, and that when operation is delayed the chances for cure diminish with mathematical accuracy in proportion to the length of the delay. The physician who does this instead of waiting to see what will develop when there is any reasonable doubt of the diagnosis, will eventually have his patients' gratitude and the higher reward of an inner consciousness of having performed his duty and saved lives, when delay would mean disaster and death.

SURGERY OF THE BILE TRACT.*

By JOHN EGERTON CANNADAY, M. D.,
Charleston, W. Va.

To operate or not to operate has been the eternal question in the treatment of gall stones. The surgeon has said operate in all cases unless the condition of the patient renders it hazardous. He has said operate early as a prophylactic measure.

A few of the internists and some of the patients say leave the gall stones alone unless they are kicking up too much of a storm—that is, make use of palliative measures in regard to diet, medicine and hygiene, and so carry around a small sized package of explosive, liable to go off at any time.

It seems to be almost a popular misconception with physicians that for gall stones ever to exist clinically and surgically there must be the associated symptom group of pain, tenderness, colic, jaundice and clay colored stools. This fallacious line of reasoning perhaps accounts for the exceedingly late stage at which many of these cases reach the operating table. As a matter of common observation, many of these cases seek the surgeon at a time when the patient is intoxicated by infection and retention, and when the coagulation period of the blood

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renders the operation extra serious in nature because of the hazard of hemorrhage.

The etiology, as we know, is bacteriological in its aspects. Typhoid, colon and the common pus bacilli find the gall bladder and associated bile tracts favorite resting points. Medical treatment, I consider fallacious in the extreme, because it is a treatment, not of condition, but of symptoms. The patient may be fairly comfortable, even though carrying about with him a bunch of gall stones, as it is his personal privilege so to do, if he wishes. Personally, perhaps most of us would hesitate about seeking the relief from a surgeon immediately after or during the first attack, yet we feel entirely different when the appendix is the offender. The difference in sentiment is largely a matter of education, and nothing but time will set us aright.

There are many reasons for operating; there are few for waiting. By operating early, we protect the patient from a probable desperate hazard taken later in the hope of giving a mere fighting chance for his life. We protect him from the great disadvantages of work done in the presence of excessive cholemia, inanition, infection, suppuration, toxemia, intercurrent disease, etc. Seventy-five per cent of all gall stones are formed in the gall bladder. Bile is an excrement; the liver a filter. Bacteria in the bile tract may come from the liver as well as from the duodenum. An inflamed gall bladder is much like an inflamed appendix, and, as a rule, needs removal.

The three most persistent signs of gall stone disease are pain, tenderness and tumor. The pain is most marked over the region of the gall bladder, and under the scapula; or, it may be referred to the usual location of the appendix. Constipation and clay colored stools may be present; jaundice is seldom seen, except in late stages. In examining the gall stone suspect, the most advantageous position is for the patient to be seated undressed to the hips, with the back to the examiner. The patient bends forwards: hands on knees. The examiner places one hand on each side of the abdomen, just below the costal margins. The patient breathes deeply, and at each respiration the hands sink more deeply, the ulnar border turning inward so that the finger tips are directed upwards, when the tender gall

bladder comes near the upward pressing finger tips, during the inspiration, which forces the liver downwards; pain is felt, and the act of breathing is suddenly stopped.

A facet on a gall stone indicates other stones, and is produced by pressure on others, when in a plastic state. Most authors look on gall stones as the exciting cause of carcinoma of the bile tract. Gall bladder pathology is best learned at the autopsy *in vivo* rather than in dead-house studies of the last stages. Infection of the bile tract is, broadly speaking, divided into the calculus and non-calculus forms. The formation of gall stones is the result of a mild infection with an attenuated culture of slight virulence. We have various forms of inflammation of the gall bladder to deal with—catarrhal, purulent, hemorrhagic, ulcerative and gangrenous. Cases of primary gall bladder disease seldom give the surgeon trouble; the neglected ones make his path thorny. The intimate association of the gall ducts with the pancreas explain in part the frequent interrelation of diabetes and gall stone disease. Achilles Rose traces a relation between atonia gastrica and cholelithiasis, due to bile stasis, leading to infection and subsequent stone formation. Cholecystitis and cholelithiasis should be no longer considered medical diseases, as the consequence of treating them as such is fraught with too much danger. The absence of gall stones at an operation in chronic cholecystitis does not prove that none have passed, or preclude the possibility of their formation.

Kocher finds it difficult to determine previous to operation the seat of the pathological lesion. He has had cholelithiasis recur four times in fifty cholecystostomies, and once in thirty cholecystectomies. Stone in the common duct does not necessarily produce jaundice, which is a symptom in not more than one-third of the cases. A large percentage of cases of supposed indigestion with pain in the epigastric region are due to gall stone disease. Among the infrequent possibilities of gall stone disease are stricture, and even atresia of the common duct. Gangrene of the gall bladder is even more rare than gangrene of the appendix, and requires still more prompt action for its relief.

Biliary concretions produce an entirely dif-

ferent set of symptoms, complications and dangers, according to their position in the gall bladder, cystic or common duct; for, while gall stones in the bladder may produce little or no discomfort in the absence of infection, and may be present for years without being recognized, until the onset of catarrh or some more acute infection, or possibly until the advent of malignant disease; yet, as soon as they leave the gall bladder and enter the cystic duct, the well-known seizures of biliary colic occur without jaundice, or with a very slight icteric tinge in the conjunctivæ, due to extension of catarrh along the ducts.

According to the size of the stone in relation to the ducts and the intensity, or otherwise, of the associated catarrh, the symptoms may present every variety, from mere evanescent spasms, usually called indigestion, to violent colic, agonizing in character, and not easily mistaken for any other disease, and in which the pain may be so acute as even to lead to collapse and sudden death.

Obstruction of the cystic duct leads to another set of symptoms, in the shape of retention of inflammatory products, and the development of a tumor due to distension of the gall bladder, either with mucus, if the catarrh is only moderate in intensity, or with mucus if the inflammation be more virulent. If the inflammatory process be very acute, phlegmonous cholecystitis, or even gangrene of the gall bladder, may occur; and associated with this acute inflammation a local protective peritonitis nearly always develops, and leads to great augmentation of the original tumor by visceral adhesions.

Perforation of the bile passages, general peritonitis, abscess, septicemia, pyemia, and other serious complications may then follow. All these symptoms and many others, may occur without any evidence of jaundice, as they are quite compatible with a perfectly patent common bile duct, and, therefore, with an absence of interference with the important excretory functions of the liver.

In rare cases, a large gall stone impacted in the cystic duct may, by pressure on the common duct, and on the portal vein, cause both jaundice and ascites, and may thus lead to an error in diagnosis. If, in the more chronic cases, at the same time the gall bladder is dis-

tended, the combination of symptoms will give rise to a suspicion of malignant disease, or if the gall bladder cannot be felt, and there are rigors and other signs of infective cholangitis, common-duct cholelithiasis will be suspected.

As soon, however, as a gall stone enters the common bile duct, an entirely different train of symptoms occurs; and, serious as the other conditions I have mentioned may be, yet a greatly enhanced series of dangers arises from an interference, not only with the excretory functions of the liver, but also with the secretory and metabolic functions of the pancreas.

The surgical complications of gall-stone diseases are so many and of such importance that I append a list:

1. Ileus due to paresis of the bowel leading to enormous distension of the abdomen, and to the symptoms and appearances of acute intestinal obstruction, apparently the consequence of the violent pain.

2. Acute intestinal obstruction dependent on:—

- (a) Paralysis of gut, due to local peritonitis in the neighborhood of the gall bladder.

- (b) Volvulus of small intestine.

- (c) Stricture of intestine by adventitious bands, originally produced as a result of gall stones.

- (d) Impaction of a large stone in some part of the intestine after ulcerating its way from the bile channels into the bowels.

3. General hemorrhages, the result of long continued jaundice, dependent either on gall stones alone or on cholelithiasis associated with disease, or with interstitial pancreatitis.

4. Localized peritonitis, producing adhesions which may then become a source of pain, even after the gall stones have been got rid of. I believe that nearly every serious attack of biliary colic is accompanied by adhesive peritonitis, as experience shows that adhesions are found practically in all cases where there have been characteristic seizures.

5. Dilatation of the stomach dependent on adhesions around the pylorus.

6. Ulceration of the bile passages establishing a fistula between them and the intestine.

7. Stricture of the cystic or common duct.

8. Abscess of the liver.

9. Localized peritoneal abscess.

10. Abscess in the abdominal wall.
11. Fistula at the umbilicus, or elsewhere on the surface of the abdomen, discharging mucus, muco-pus, or bile.
12. Empyema of the gall bladder.
13. Infective and suppurative cholangitis.
14. Septicæmia or pyæmia.
15. Phlegmonous cholecystitis.
16. Gangrene of the gall bladder.
17. Perforative peritonitis due to ulceration through, or to rupture of the gall bladder or ducts, leading to extravasation of infected bile into the general peritoneal cavity.
18. Pyelitis on the right side, due to a gall stone ulcerating, or an abscess of the gall bladder bursting into the pelvis of the kidney.
19. Cancer of the gall bladder or ducts.
20. Subphrenic abscess.
21. Pleurisy or empyema of the gall bladder.
22. Pneumonia of the lower lobe of the right lung.
23. Chronic invalidism and inability to perform any of the ordinary business or social duties of life.
24. Gangrenous or suppurative pancreatitis.
25. Chronic interstitial pancreatitis.
26. Infective endocarditis.
27. Cirrhosis of liver.
28. Appendicitis due to extension of inflammation from gall bladder or to the impaction of gall stone in the appendix.

Our text-books up to within a very short time have been misleading, not only in the interpretation of symptoms, but in recommending the proper management of these cases when diagnosed. It was generally advised that an operation on the ducts or gall-bladder be not performed, unless jaundice was severe and persistent, colic lasting and of frequent occurrence, or when there was evidence of pus in the gall bladder—all of which are very late manifestations of biliary tract disease. Gall stones themselves, since they cannot form in a few days, are late manifestations of pre-existing disease.

As soon as gall stones give trouble their removal by operation is the most rational method of treatment, since it is only from the complications, which usually rise sooner or later that danger from operation need be apprehended. When gall stones have once formed, no medical treatment known to us can remove them,

though medical measures often can do much for the relief of catarrhal conditions of the gall bladder. By all means, after medical measures have had fair trial, surgical relief should be attempted.

No surgeon should attempt the removal of gall stones unless he is prepared for any of the various operations on the biliary passages, as it is impossible to say beforehand what may be required. The frequency of gall-stone disease is shown by the fact that ten per cent. of autopsies bring stones to light; the symptoms of this trouble are all too often attributed to something else. In cases where a positive diagnosis cannot be made, exploratory incision should be unhesitatingly recommended, as in good hands, it is practically free from danger, and is pregnant with possibilities for good.

Operative treatment is indicated, generally speaking, in all cases of gall bladder disease unless, of course, there are special risks to be run by waiting. I would as earnestly and conscientiously advise operation in gall-bladder disease as I would advise the removal of the much-discussed appendix. When a patient presents himself with a history of indigestion, occasional attacks of pain, or tenderness, or both, over the region of the gall tract, and maybe, at times jaundice, colic, or other of the severer symptoms commonly looked for, a surgeon should be consulted. We must carefully investigate and scrutinize with a view to operation when the slightest sign of appendicitis turns up. Indeed, most patients affected with this disease are quite equal to the occasion, and make their own diagnosis at an early date. Why should we have so many scruples, and so much dilly-dallying over a case of gall tract disease? From the nature of things, case for case, the mortality in bile-tract surgery has been fairly high. There are several reasons for this. The work presents technical difficulties that may only be overcome by the proper exercise of surgical ability and skill which has been well trained in the particular technique of the operation required.

Indications for gall stone operations are:

"1. Presence of any symptoms seriously interfering with patient's mode of life.

"2. All cases in which medical treatment has failed.

"3. Acute suppurative cholecystitis or cholangitis.

"4. Acute suppurative chronic obstruction of the cystic duct.

"5. Persistence of acute obstruction of the common duct.

"6. All cases of calculus, save possibly acute obstruction of the common duct.

"7. Perforation; and,

"8. Cases in which there is a suspicion of primary carcinoma of gall bladder."

Operation is contraindicated in:

"1. Acute obstruction of the common or hepatic ducts, in the belief that the stone may pass through the common duct into the duodenum, and no others are present to produce a new attack. If fever, however, is associated, indicating suppurative cholangitis, operation should be performed with drainage of the hepatic duct.

2. Very old or stout individuals, or those suffering from diabetes, arteriosclerosis, cardiac, pulmonary or renal disease.

3. Extensive carcinoma of the biliary passages.

The precise nature of the operation will remain in the balance frequently, until after the exploratory incision has been made, and the exact condition of the gall-bladder and biliary passages determined. Dependent upon conditions found in the gall bladder, the operation will be cholecystotomy, cholecystostomy, cholecystendosis, or cholecystectomy. If the calculus is implanted in the cystic duct, cysticotomy; if in the hepatic duct hepaticostomy, hepaticotomy, or hepaticolithotripsy; if in the common duct, choledochotomy, choledochostomy, cholecystenterostomy, choechoenterostomy, choledochectomy or hepaticoduodenostomy."

Preliminary to any attempt at exposure of liver or bile ducts, that part of the anatomy must be supported and brought prominently forward by a sand-bag, placed under the back a little above the lower level of the liver. If in addition to this a slight reversed Trendelenberg position is adopted—the feet being about eight inches lower than the head—the intestines will fall away from the incision exposure, and increase the access.

The incision that gives the freest access is that of Mayo-Robson. The first vertical is made through the right rectus through its

outer border, and is about five inches in length—the upper end beginning at the costal margin. When more room is needed the vertical cut may be lengthened downwards, or its upper extremity may be carried upward and inward, dividing a portion of the recti fibres not far from their insertion into the costal margin. In perhaps a greater portion of cases, if the anterior and posterior muscle sheaths are incised the muscle itself can be retracted well toward the ensiform appendix and sufficient room be given. It is never advisable to make the peritoneal incision to the margin of the wound, since the membrane stretches readily.

In thick abdominal walls there will be an advantage in making the skin and fat incision two inches longer than the fascial cut. A large gauze sponge with safety tapes attached should be systematically and judiciously placed so as to hold the intestines out of the way, and at the same time be a preventive of possible contamination from the opened bile tract. In packing, it is well to place gauze on the left hand side of the gall bladder, then below, and finally on the right side. Kehr and Courvisier make incisions of phenomenal length, but they are rarely really necessary, and often a disadvantage for the reason that they will allow the intestines to prolapse through the wound. Next, the pathology is located, if possible, and liver and gall-bladder adhesions, if so placed as to interfere with the work at hand, are broken up. Much care must be taken for the prevention of bleeding, and of tearing any of the hollow viscera. The bile tract can then be thoroughly inspected by sight and palpation. The gall bladder and liver together are seized in the gauze-covered gloved hand, and gently drawn downward, and from under the shelter of the ribs; when this first step can be affected it will be an easy matter to rotate the liver so that its under surface presents upwards and forwards. The cystic and common ducts are brought into almost a straight line, and almost on a level with the skin, in most subjects. In those having very thick abdominal walls the exposure cannot be so favorable. In some thin women, particularly, the common duct can be brought outside the wound. If stones are present in the gall bladder they are dealt with by cholecystotomy or cholecystectomy—the former will always be the desirable operation in a con-

siderable number of cases for the reason that it can in appropriate cases give the most speedy relief. It will be at times useful as a palliative and temporizing measure, preliminary to more radical procedure when the strength of the patient justifies it. To attempt a complete operation in some cases that are very feeble means almost certain death.

This operation was first performed by Dr. Marion Sims, about thirty years ago. That was the first step in a revolution soon to be brought about. Thence forward gall-stone disease was the property of the surgeon.

The fundus of the gall bladder is drawn up as far as possible without undue traction and well packed around with gauze sponges; with a good-sized aspirator, the contents are emptied; while this is going on the bladder is seized either side the needle with a pair of hemostats. The fundus is opened with the scissors to the extent of about three-fourths of an inch. The stones can then be easily removed with a gall-stone scoop. The ducts are again inspected with the fingers, and if there are stones in the cystic or hepatic ducts, it may be possible to dislodge and milk them into the gall bladder. A drainage tube usually about one-third of an inch in diameter is inserted well into the gall bladder, going almost down to the cystic duct opening. The tube is fixed by a plain cat-gut stitch, which passes through all the coats of the gall-bladder except the mucosa. The tube is further secured by a purse-string suture, which is tightened while the tube is being invaginated into the bladder, or it may be covered over by the usual gastrostomy stitch. If the tube is fastened in this manner there will be no leakage. The gall bladder is dropped back in the abdomen and the tube brought out through a separate stab incision, and the operation wound entirely closed. Formerly it was the fashion with many to fasten the gall bladder to the parietal peritoneum by a few sutures, but this is unnecessary, since omental adhesions form around the tube in a few hours, and make the drainage strictly extra peritoneal.

Stones in the cystic duct may be loosely floating or impacted; needling or crushing are rather unsurgical, and seldom resorted to today. Removal of the cystic duct along with the gall bladder, or after opening the cystic duct, cysticotomy is preferable. After the latter opera-

tion it may be necessary to use a drainage tube. If the duct is sutured, fine cat-gut should be used, and the mucosa should not be penetrated.

The operation of cholecystectomy, while giving, surgically, more ideal results, does, at times, add perceptibly to the risk of operation.

The indications for this operation are:

"1. Injuries of the gall bladder, stab or bullet wounds.

"2. Gangrene of the gall bladder.

"3. Phlegmonous cholecystitis.

"4. Membranous cholecystitis.

"5. Chronic cholecystitis with dense thickening of the walls of the gall bladder and cystic duct, or without stenosis of the cystic duct, and in chronic cholecystitis, when the gall bladder is shrivelled and puckered, and universally adherent. In such cases it is no longer a receptacle for the bile.

"6. Distension of the gall bladder, hydrops or empyema, due to blockage of the cystic duct by calculus, stricture, growth, or external inflammatory deposits; or in cases of mucous fistula following operations for these conditions.

"7. Cases of fistula between the gall bladder or the cystic duct, on the one hand, and the stomach, duodenum, or colon, on the other.

"8. Multiple ulcerations of the gall bladder or the cystic duct, when the gall stones have eroded their way through the walls into the liver, the duodenum, or other protective adherent masses.

"9. Primary carcinoma of the gall bladder."

About this operation there are many differences of opinion, and a few would restrict it to cases of irremediable obstruction of the cystic duct. This operation has one disadvantage that at times may be of serious import. It will make a second operation more difficult and dangerous. For stones may at times form in the hepatic and common ducts, but this possibility is rather remote. Cholecystectomy as an operation has developed since the eighties. One may begin at the base of the gall bladder, or begin at the cystic duct—the latter by preference. The cystic duct and artery are ligated separately; with the gauze-covered finger, the bladder is separated from its fossa. It is next removed by the division of its peritoneal folds about half an inch from the liver, so as to leave sufficient covering for all the raw surface. Before suturing, this oozing is stopped

by the hot compress, or, in rare cases, it may be necessary to pass a suture of cat-gut through the liver tissue and tie gently. The blunt-pointed needles of Kousnietzoff are useful here. Ten-day chromicized cat-gut for the duct ligature, and plain gut for the peritoneal sutures will generally suffice. Drainage will seldom be necessary, though a number of operators drain all liver cases, even when closing all other clean sections which looks like an idiosyncrasy.

Gall stones in the hepatic duct may usually be removed through the common duct. If located much above the bifurcation in the liver substance they probably cannot be removed. If a stone be removed from this duct by incision the wound should be carefully sutured, and drainage provided for, in case of a leak. It occasionally happens that the hepatic or common duct may become enormously dilated through obstruction, and contain large quantities of bile or mucus.

The common duct may be obstructed by stone at any point; in fact, I have seen both it and the hepatic duct impacted from end to end with gall stones. Common duct stones may be approached from above the duodenum and through the duodenum. It is practically always advisable to drain the common duct after opening it to remove gall stones. The duct is usually large enough for exploration with the finger and small forceps, or a gall-stone scoop can be easily passed. Care must be taken to prevent soiling of the operation field, and the drainage tube must be carefully sutured in place. When a stone is impacted in the ampulla of Vater, or anywhere in the third portion of the duct, the transduodenal route will be nearly always be necessary, as the common duct can be anastomosed with itself or the duodenum without any great difficulty.

CANCER OF THE LIVER.*

By O. F. BLANKINSHIP, M. D., Richmond, Va.

I will not enter into the anatomy or physiology of the liver, as these can be easily referred to in text books; but will remind you of a few points concerning functions of this organ. That it has very important functions would be indicated by its size—being the largest organ in the body, weighing from three to four pounds—and by its blood supply from the gen-

eral arterial system by the hepatic arteries, and also receiving a supply of venous blood through the portal vein, which collects all the blood from the digestive organs, containing the product of the digested food. Nature makes this organ stand as a sentinel between the abdominal viscera and the general system.

If any enemy to the general system subtly should try to enter by these portals, it is arrested by the liver and rendered inert; or else thrown off in the bile. The liver is also unique in the fact that it is both a secretory and an excretory organ. The bile is both a secretion (having a certain part to perform in the digestive process), and an excretion (cholesterin being a waste product). The liver may also be regarded as a ductless gland, in that it furnishes to the blood a secretion, glycogen, which is glucose that has been changed in the liver into glycogen. These remarks are simply to show the great importance of this organ. No wonder, in reply to the question, "Is life worth living?" the reply comes back, "That depends on the liver."

Bearing in mind the large territory drained by the liver, we can well see why secondary cancer of this organ should be common to primary cancer of other organs connected with it by the portal circulation.

Cancer of the liver is third in the order of frequency of internal cancers. It is usually a disease of late adult life—being most frequent between the ages of forty and sixty years. The per cent. of *primary* cancer in the two sexes is about equal. The *secondary* variety more often attacks women than men, perhaps on account of susceptibility to cancer of the uterus and mammae. Heredity can be traced in about fifteen to twenty per cent. of cases. It is sometimes due to trauma. It is said that about sixteen per cent. of cases of cancer of the stomach follow gastric ulcers; also that about seventy-three per cent. of cases of cancer of the gall bladder follow in cases of gall-stone troubles.

There are three varieties of *primary liver* cancer: (a) *Massive*, which shows a uniform mass of new growth, occupying most of the organ. It is grayish white in appearance. (b) *Nodular*, in which the liver is occupied by nodular masses—large or small—irregularly scattered throughout the organ. This is like the secondary form; only it does not attain so large

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a size. (c) *Cancer with cirrhosis*, which is very rare. The liver is very little, if at all enlarged. It is studded over with nodular, yellow masses, resembling the masses in an ordinary cirrhotic liver.

Histologically, primary hepatic cancers are: (1) epitheliomatous, alveolar and trabecular; (2) secondarily, the organ is enormously enlarged—sometimes weighing twenty-five to thirty pounds. These growths are generally nodular, and are, histologically, of the nature of the original growth.

The proportion of cases of cancer of the bile passages is greatest in the female, being, according to Musser, three to one.

The association of liver cancer with biliary calculi has long been recognized; it is present in seven-eighths of all cases (Osler).

Of *primary sarcoma*, very few cases have been reported. *Secondary sarcoma* is more frequent. The most serious form is *melano-sarcoma*, which is generally secondary to the same condition of the eye or skin. The liver is greatly enlarged, either uniformly infiltrated with cancer, and the cut surface having a dark granite appearance, or there are large nodular masses of deep black marbled color.

As a rule, cancer of the liver is associated with progressive enlargement; but sometimes cirrhotic cases occur in which there is no enlargement. Gastric disturbance, loss of appetite, nausea and vomiting are frequent symptoms. Progressive loss of strength and flesh may be early noticed. Pain or a sensation of weariness in the right hypochondriac region is usually present. Jaundice occurs in about half the cases, but is generally of only moderate degree. Ascites is rare; superficial veins are enlarged. The abdominal tumor moves up and down with respiration. Spleen is rarely involved. Pyrexia is present in some cases, in which there is usually a continuous fever of 100 or more degrees. Oedema of the legs (due to anemia) is usual late in the disease, and then there is the usual cancerous cachexia.

In making a *diagnosis*, we should bear in mind the factors of age and heredity in doubtful cases. The enlargement of the liver is often the first sign of serious disease. It often attains immense size, sometimes weighing as much as twenty-five pounds. Usually, as the nodular type is the most frequent, nodules can be felt on palpation. Pain is usually a very

prominent symptom. It may be dull, boring in character, or sharp and cutting—radiating to the shoulder, back and loins.

The diseases which are most likely to be mistaken for cancer are hepatic abscess, cirrhosis (hypertrophic form), amyloid degeneration, syphilitic liver, hydatids.

Abscess of the liver at first stimulates cancer, but hectic fever soon occurs in the former. Abscess usually occurs earlier in life, and often follows dysentery. Jaundice, ascites and edema are infrequent. The hypodermic needle may be used as a diagnostic agent. An abscess of the liver occurring in my practice pointed on the back, having burrowed between the ribs. Opening and drainage resulted in cure.

In *hypertrophic cirrhosis*, there is deeply marked jaundice, but with little wasting or anemia. The liver is smooth and painless. Ascites is common, and the disease usually occurs earlier in life, and usually in alcoholics.

Amyloid disease of the liver is generally secondary to prolonged suppurative, or an exhausting disease. The spleen is often enlarged. The disease is of long duration.

Gummata of the liver follow other manifestations of syphilis. The history of the case and other signs of the disease should solve the doubt. Cachexia does not follow.

Hydatid disease (due to immature forms of the tenia echinococcus—a parasite principally of the dog) is rare in this country, but common enough in Iceland, where the small dwellings of the natives are occupied alike by dog and man. The tumor is large and single, and causes symptoms other than pressure. Fluctuation in the tumor may give rise to the "hydatid fremitus." The hypodermic needle will show the characteristic fluid (non albuminous, and of lighter specific gravity), and, under the microscope, the "hooklets."

Treatment. Osler curtly says: "Treatment must be entirely symptomatic—allaying the pain, relieving the gastric disturbance, and meeting other symptoms as they arise," which is probably all that can be done in the great majority of cases of cancer of the liver. But in certain cases of primary cancer, when the growth is favorably located, and diagnosed early, a cure can sometimes be effected by operation. In a suspected case, exploratory incision may be made; and, if the growth is favorably situated, and does not involve too much

of the organ, and if there is no evidence of metastasis, it should be removed. Experimenters have removed as much as three-fourths of the liver in dogs, without permanent bad effect.

I will conclude by reporting two cases of hepatic cancer which have occurred in my practice:

CASE I.—Mr. H., white, age forty-five, teamster, married, and was a strong healthy looking man. He had been sick five months, having had a blow over the liver a few months before. Pain developed in the liver region. Hepatic enlargement became noticeable not long after he came under treatment. There was some, but not marked gastric disturbance. A moderate jaundice developed. Superficial veins over the liver were enlarged. Later, edema of the legs and ascites developed. Cachexia became marked. Early in the case, pain and discomfort from swelling were the marked symptoms. This patient passed out of my hands five weeks before death. His last medical attendant concurred in my diagnosis of primary cancer of the liver. No autopsy, however, was made. This patient was not an alcoholic, nor was there the least suspicion of syphilis.

CASE II. This patient was operated on first, for a tumor, believed to be cancer occurring in the left flank, and made a complete recovery, but subsequently developed cancer of the liver.

I was called to this patient, Martha H., age twenty-one years, colored, married; had one child three years ago; was in labor seventeen hours. She says she had severe attacks of pain in lower abdomen and leg two weeks after labor. A year later (two years ago), she noticed a movable growth in her left flank, which continued to grow, causing some—not severe—pain, and disturbance of functions of the bladder and bowel. She worked as a servant, but was occasionally forced to stop for a few days.

When I first saw her, her abdomen was distended probably as much as that of woman at ordinary full term. She had vomiting, pain, a very rapid and irregular pulse and considerable fever. Under treatment, acute symptoms soon subsided. The tumor appeared to be almost solid, but on palpation there was a slight elastic feeling in some portions. I advised operation as the only means of relief. She consented, and was taken to the hospital No-

vember 14, 1905, when I assisted Dr. Henson in a laparotomy on November 16th.

On opening the abdomen, the tumor presented in the opening as a tense, shiny sac, apparently with thick fibrous walls. Adhesions of the omentum to the sac, above the umbilicus, seemed to be much twisted like a rope. This was ligated and cut, but it was almost impossible to deliver the tumor. A trocar was introduced, but nothing came. We then, with a scalpel, opened the sac, when, with considerable force, we succeeded in evacuating much semi-solid, gluey fluid, of dark wine color, with an occasional cheesy mass; then, we delivered the tumor. There were adhesions to the sigmoid flexure and posterior bladder, but there was no regular pedicle. After cutting and tying adhesions, and stitching the peritoneum over the raw surfaces, and making the peritoneal toilet, the incision was closed with through-and-through silk worm gut sutures.

During the operation, the patient suffered severe shock, for which oxygen inhalations and saline injections beneath the breasts were used. The patient reacted well, and made a good recovery and resumed her duties.

I should have mentioned that a glass drainage tube was left in the lower angle of the wound, but there was no discharge to amount to anything.

I am sorry I cannot state the exact nature of the tumor. Dr. E. Guy Hopkins thought it probably a cyst adenoma. I examined some of the contents under the microscope, and found some bodies which I believed to be inflammation corpuscles of Gluge, which are supposed to occur in various cysts.

After resuming her duties as house servant for three or four months, she consulted me about a swelling in the region of the liver. This swelling gradually increased in size, and her health gave way. She suffered great pain, but there was very little, if any jaundice, and no anasarca, nor ascites, but there was disturbance of gastric and intestinal functions. The enlargement became enormous, and there was gradual loss of strength.

She was removed to the hospital, where an exploratory puncture with a hypodermic needle was made, and a small amount of blood and bloody froth obtained. Dr. Henson and I made exploratory incisions, and found a tremendously enlarged, dark, bluish liver. The

exploratory needle was used to see if any pus or fluid could be obtained, but nothing but blood. Deciding that nothing more could be done for her, the opening was closed. She lingered for a week or two and died from toxemia, innutrition.

On autopsy, an immensely enlarged liver filled nearly the whole abdominal cavity; it must have weighed twenty or more pounds. It was soft, dark or bluish red, quite friable, and had general adhesions. No histological examination was made. Macroscopically, I took it to be a melano-sarcoma.

Reviewing the history of this case, I undoubtedly believe that the cancer of the liver was secondary to cancer of the ovary or broad ligaments.

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AMPUTATION OF THE KNEE JOINT UNDER LOCAL ANESTHESIA.*

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Only because the following case presents the ideal conditions for the employment of local agents for anesthesia, and not because of its rarity (for such operations are quite common) is this case reported and commented upon:

Foster, F., male, about eighty-four years old; laborer.

The previous history has little or no bearing on the present illness.

Present illness. About November 20, 1908, while engaged in digging a well, he was precipitated a distance of forty-seven feet by the breaking of a rope, sustaining a compound fracture of the tibia and fibula in the lower third, right limb. He was given prompt treatment, but after a week or ten days it became evident that sloughing was imminent in the damaged area. As the wound was now foul, and his general condition deteriorating, he was sent to the city for more active treatment than could be furnished in the rural district in which the patient lived. He was admitted to the hospital December 5, 1908.

Present condition: The right tibia and fibula were seen through a wound in the lower third of the leg. The visible fragments were soft and necrotic. The foot and lower portion of the leg were gangrenous, moist and fetid,

without a line of demarcation. The heart appeared normal from an examination by percussion and auscultation. His vessels were hard and tortuous in the extreme. So marked was this change that the pulse in the radials was too feeble to accurately count, although the rate was from eighty to ninety. He also had bronchitis. The urine was free from albumen, sugar and casts. Although his temperature and pulse were but slightly subnormal, his general condition seemed analogous to that indefinable pre-collapse state so often encountered in conditions attended with gangrene. As nature had made no successful effort to localize the destructive process in two days after arriving at the hospital, an operation was decided upon and done December 7th.

Operation: The patient willingly submitted to any surgery, and without explaining to him the contemplated operation, he was placed upon the operating table, with his eyes covered, previous to which he was given one-fourth grain morphine sulphate. A competent conversationalist or "moral anesthetist" was instructed to keep the patient's attention diverted from his environments while the only instruction to the patient was to notify us if he had pain. The anterior crural nerve was exposed under local anesthesia, consisting of one grain to an ounce of sterile water, to which was added eight drops of adrenalin solution. About ten drops of a one-per-cent solution of the anesthetic was used to inject or block the nerve trunk. The wound was then closed. The patient was turned on the side, the sciatic nerve exposed in the popliteal space, and injected in the same manner. This was also closed. A tourniquet was then applied above the knee. The skin below the knee, and on the outer aspect was injected with the weak solution because the nerve (external cutaneous) supplying this region, was not exposed, owing to its size and varied course. The Stephen Smith, or hooded flap operation was done at the knee joint, dividing the femoral artery without hemorrhage, and the popliteal nerve without pain. The patella was not removed. The blood lost was inconsiderable, less than half an ounce. The patient was given two half-ounces of whiskey during the operation, to stimulate the psychological rather than the physical man.

When the operation was completed he was not

*Read at a meeting of the Clinical Society of District of Columbia, February 8, 1909.

aware that the limb had been amputated, but stated that the foot felt much better. He was returned to his bed without any shock and was allowed lunch at once.

The operation was devoid of severe pain at any time, and the greatest complained of was due to the incision through the area supplied by the external cutaneous. This seemed to be only imperfectly anesthetized, and he described the pain as similar to that of having pins thrust into him. He did not flinch at any time and no assistants were called upon to even steady the limb.

The age of the patient, the condition of the circulatory and respiratory organs positively contra-indicated the use of ether, and likewise chloroform, from my point of view, as several animal experiments have convinced me that this anesthetic increases blood pressure. This is in accord with the work of Blauel (quoted by Bloodgood), who states that there is a wide variation in the action of chloroform in its relation to blood pressure. The shock following the operation was nil, a condition impossible to attain with a general anesthetic. The nerve blocking, according to Crile, is the feature which mainly eliminates shock.

Should the occasion to duplicate this operation present itself, I should make an effort to block the external cutaneous, rather than to depend upon infiltration about its terminations. Otherwise I would not modify the technique.

TREATMENT OF EPITHELIAL CANCER.

By JAMES T. CLARKE, Sr., M. D., Mt. Solon, Va.

In a regular practice of more than fifty years, my treatment of epithelial cancer has been as follows:

I take equal parts of chloride of zinc and wheat flour (by volume) and make a paste. I ascertain, as nearly as I can, the depth of the cancerous disease, and then apply a small cantharidal plaster, long enough to separate, and then remove the cuticle from the vesicated surface; and, with a cutting punch a shade less than the surface diseased, perforate a small piece of leather of approximately the same thickness of the cancer. Place this over the center of the cancerous surface and fill the opening with the paste, and confine it by laying two narrow strips of adhesive plaster across it in a crucial form. I remove this on the eighth

day, and almost invariably find the diseased tissues converted into a tough, fibrous mass; the cuticle is separated from the adjacent tissue, which may be taken out. No suppuration occurs. A strip of adhesive plaster is then applied on the skin at one side of the opening, and drawn across it so as to bring the sides into opposition, when they unite by first intention, leaving a secure lineal scar, scarcely visible.

This treatment has never failed me in a single instance, nor has the disease shown evidence of return. In one or two instances, the vitality of the diseased tissues was not destroyed to a sufficient depth, when a re-application of the paste was immediately made, so as to complete the removal.

Through the intercessions of a patient who had fungus hematodes of the breast, from which there was constant oozing of a very offensive discharge of bloody serum, I applied the paste in my usual way—informing the patient, however, that I had no confidence in its efficacy in her case. But, much to my surprise, I found the fungus destroyed by the eighth day, except as to a small spot in the centre of the opening, which a second application of the paste removed. She told me that on the evening I first applied the plaster she was suffering with severe lancinating pains, darting from her right breast—the seat of the disease—across the chest, into her left shoulder, at *short intervals*, up to one o'clock that night. Then the pains suddenly ceased, and never returned. She lived ten or fifteen years afterwards, and died of some other disease.

This experience is not given as either new or original, but to recall facts which seem to have been too much forgotten or neglected in this peculiarly surgical day.

REMEDY FOR BLACK EYE.—There is nothing to compare with the tincture of strong infusion of capsicum annuum mixed with an equal bulk of mucilage of gum arabic with the addition of a few drops of glycerin. This should be painted over the bruised surface with a camel's-hair pencil and allowed to dry on, a second or third coating being applied as soon as the first is dry. If this is done as soon as the injury is inflicted, it will invariably prevent blackening of the bruised tissue. This same remedy has no equal in rheumatic sore or stiff neck.

Book Notices.

Genito-Urinary Diseases and Syphilis. By EDGAR G. BALLENGER, M. D., Lecturer on Genito-Urinary Diseases, Syphilis and Urinalysis, Atlanta School of Medicine, etc. With 86 illustrations. Atlanta, Ga. E. W. Allen & Co. 1908. 8vo. 276 pages. Cloth. \$3.00.

Barring some misprints, such as "hyocyamus" for "hyoseyamus," the non-use of diphthongs when such are intended, etc., this is a good, practical book on gonorrhea, its consequences, prostatic disorders, spermatorrhea, diseases of the penis, chancroids, cystitis, syphilis, etc. It is prepared especially for the clinical college student and describes conditions as ordinarily seen. Illustrations are abundant to help such descriptions, as also the uses of instruments in operations, etc. The sections on treatment are generally quite full, and, for the most part, are based on the experiences of the author in his special line of work. Discussions of mooted points are eliminated so as to give the book a truly practical value to the practitioner—although the author claims for his production simply a guide book for the student and young graduate.

Industrial and Personal Hygiene. By GEORGE M. KOBER, M. D., Chairman of Committee on Social Betterment of the President's Home Commission, etc. Published by the President's Home Commission, Washington, D. C. 1908. 8vo. 175 pages. Paper.

The title of this book is confusing. It really relates to the "study of the causes of sickness, and the means of promoting industrial efficiency and earning power." It is in fact a report on "dangerous trades." Singularly, in the United States, the report of the inspector of New Jersey was the only one available for data. So that only the odds and ends of statistical information could be got from the whole United States—many of the statistics being borrowed from other countries—yet the report is intensely interesting, and filled with excellent suggestions as to the proper hygiene of many of the trades and occupations of Americans. It is a book for reference by all State and municipal health authorities who are studying the prevention of disease—especially in the working classes.

Introductory Physiology and Hygiene. Elementary Physiology and Hygiene.

The author of these two books is H. W. Cohn, Ph. D., Professor of Biology, Wesleyan University, and the Publishers, Messrs. Silver, Burdett & Co., New York, Boston and Chicago. They are essentially elementary, and are not books for doctors, but for school children. Some of the drawings are exaggerations of true conditions, such as the representation of villi of the intestines (page 59 of *Elementary Physiology*), but such may be required to give a child an idea of the facts.

Gonorrhea in Women. By PALMER FINDLEY, M. D., Professor of Gynecology, College of Medicine, University of Nebraska, Omaha, etc. St. Louis, Mo., C. V. Mosby, Medical Book and Pub Co. 1908. Large 8vo. 112 pages. \$2.

Too little importance is generally paid to this subject except as to its results. The same disease in man calls for prompt and positive attention; but too often, if the patient be a wife, she is allowed to treat herself as if for catarrhal leucorrhea or something of that kind, lest the husband be inculpated. Prudence on the part of the physician may save him from criminal suspicion, while, at the same time, proper local treatment may be given the woman, which will save her almost untold sufferings—such as ovarian diseases, peritonitis, etc. This book well helps the doctor in diagnosis and in suggestions as to the proper plans of treatment.

Applied Surgical Anatomy, Regionally Presented. By GEORGE WOOLSEY, A. B., M. D., Professor of Anatomy and Clinical Surgery, Cornell University Medical College, etc. Second edition, enlarged and thoroughly revised. With 200 illustrations, including 59 plates, mostly colored. Lea & Febiger. New York and Philadelphia. 1908. 8vo. 601 pages. \$4.50 net.

This is a most valuable book for any surgeon, as it teaches him the structures and organs to be reached in succession by incision of any part of the body. The work is likewise useful to the physician as reminding him of matters pertaining to regional anatomy, which he should know about. This second edition contains a great many more points of odds and ends of information which are constantly serviceable to the operative surgeon. The relationship of important arteries and nerves to

super-imposed structures, being incised, is well pointed out. Many an accidental severance of a nerve, for instance, could have been easily avoided had the surgeon refreshed his memory by consulting this book in advance. Illustrations are plentiful and graphic. This book is, indeed, a most useful addition to the library of any doctor.

Reference Hand-Book of Gynecology for Nurses. By CATHARINE MACFARLANE, M. D., Gynecologist to Woman's Hospital, Philadelphia. Illustrated. Philadelphia and London. W. B. Saunders Co. 1908. 32mo. 150 pages. Flexible leather, \$1.25 net.

Reference Hand-Book for Nurses. By AMANDA K. BECK, Graduate Illinois Training School for Nurses. Second edition. Philadelphia and London. W. B. Saunders Co. 1908. 32mo. 200 pages. Flexible leather, \$1.25 net.

Both of these "hand-books" are specially useful to nurses in their rounds of duty. While each contains a full share of information, they are principally intended for ready reference purposes in cases of emergency or special need. While wanting in the details essential for the pupil nurse, they will serve their intended places as being ready reminders. The book by Dr. MacFarlane is distinctly intended for nurses in gynecological cases, both during operative work and afterwards; while that by Miss Beck has a wider scope—especially for the general sickroom. Both books are up-to-date in their teachings, and may be safely recommended according to the special needs for a "reference hand-book."

Editorial.

Doctors as Public Health Officials.

Every practitioner of medicine—each in his own community—has a high, responsible, self-imposed trust laid upon him by the nature of his profession. He is looked to by each of his patrons to be on the watch for preventable diseases, and to suggest such measures as will safeguard families from them. His duty is not only to prescribe for and study out the treatment essential to the relief or the cure of diseases, but to find out their causes; and, when these causes are found to be preventable, to teach the facts. Such a course is not

only human, but, when properly followed out, elevates the profession of medicine high above most other professions or callings.

According to reports that came in from the Russo-Japanese War, there was scarcely anything that so elevated to the highest esteem the magnificent results accomplished by the Japanese surgeons as their efforts to prevent diseases among their troops. In fact, attention to such matters in great part won the victories for them. It kept up the *morale* of their sailors and soldiers, for nothing is so demoralizing as to know that epidemics or endemics of diseases are devastating the camps or the people.

While the medical profession has by no means accomplished all of its undertakings in the prophylaxis of diseases, in recent years it has discovered so many means of preventing the infections especially, that we may reasonably hope for better things still in the near future. Puerperal sepsis and such things have become almost conditions of the ignorant age. True, some people yet cling to the "old granny" as the accoucheur—against the advice of reputable doctors—and the various infections incident to childbed are spread. In fact, we hear of trains of cases of puerperal fever, of one form or another, following the practice of such accoucheurs. But it is now a very rare and most accidental circumstance when such a fate follows the practice of a reputable doctor. Here we have to be more and more persistent in the education of families, and in reporting the facts to State or local health boards so that they may exercise their due authorities in preventing practice by such "old grannies."

In this number of the *Semi-Monthly* is a paper by Dr. Harnsberger, which is ripe in suggestion as to a means for the prevention of measles and scarlet fever. There is undoubtedly a broad field for useful investigation as to the prophylactic effects of serum therapy—serum derived from animals known to be immune to certain diseases.

Our Boards of Health—State and Local—are ever awake to such suggestions of even probable benefit; and it is a bounden duty on the part of every practitioner to render such Boards all the help possible. Their distinctive police authority in all matters pertaining to public

health is not well enough recognized by doctors at large—although they are becoming more and more educated to report probably preventable troubles to such boards. Our boards of health, for the most part, are composed of men who are making preventive medicine a life study, and it is due to them, as also to their patrons in practice, that doctors should give these Boards all the information and help possible. Nowhere is the saying more true than "in union there is strength."

In this connection, we cannot refrain from a word of special commendation of the health officer of the city of Richmond, Dr. Ernest C. Levy, in his untiring energy in preventing the many causes of milk infection in this community. Milk is almost an essential food for the adult in many conditions, as also for the infant; and the dairies of this city have become aware of the law which allows the health officers at any moment to drop in, without notice, and make proper inspections of milk for sale and of the sanitary condition of the places. Through his influence, also, all the wells of the city are being closed up, and is thus materially lessening the amount of typhoid fever. Doctors of the city are quite a unit in helping this authority in ferretting out these and other cause of disease.

As efficient as the present State Board of Health has already been in rendering help in the prevention of infections, it could be, as it wishes to be, far more helpful to the doctors of the State if they would only promptly make reports of even suspicious circumstances. This Board is provided with men and means to successfully follow up any such reports for the betterment of the health of communities if it can only persuade all practitioners to give it prompt and reliable information.

Doctors of Virginia are making an earnest effort this year to rid themselves of the grossly unjust State license taxes imposed on them. By aligning themselves as real assistants to their local and State Boards of Health, they will be placing themselves in such a position that conscientious legislators can no longer withhold the adoption of the Bill to come before the next General Assembly for the repeal of State license taxes on practitioners. Their work will impress itself as so distinctly humanitarian in its nature that a mere statement

of facts, we believe, will be sufficient to secure the adoption of the measure.

We propose to follow up the question of repeal of State license taxes on Virginia doctors in some subsequent issues, and would be glad if all our State doctors, as well as prospective legislators, could be induced to read what may be said on the subject.

The Southside Virginia Medical Association

Held its twenty-fourth session at the Court-House, Lawrenceville, Va., March 9th. Papers were read by the following: Drs. W. H. Lewis, Lawrenceville; Southgate Leigh, Norfolk; Lucien Lofton, Emporia; J. Shelton Horsley, Richmond; J. G. Rennie, Petersburg; Greer Baughman, Richmond; J. W. Baird, Carsley; F. N. Mallory, Lawrenceville; W. W. Gill, Richmond; A. J. Osborne, Lawrenceville; J. Allison Hodges, Richmond, and W. F. Drewry, Petersburg.

During the session, a luncheon was given at a local hotel. Time and place of the next meeting are not given in the notice sent us.

The Piedmont Medical Society

Will hold its next regular meeting at Orange, Va., April 17th. The subject for discussion will be "Intestinal Perforation in Typhoid Fever," Dr. C. C. Tenant, of Charlottesville, leader. Dr. Lewis Holladay, of Orange, is Secretary.

Obituary Record.

Dr. William K. Gatewood,

For long years one of the most prominent physicians of West Point, Va., and surrounding sections, died March 7, 1909, at the home of his daughter, at Marion, S. C. Dr. Gatewood was born in Middlesex county, Va., March, 1838. His academic education was received at Ridgeway Academy and William and Mary College. He graduated in medicine at the Medical College of Virginia in 1858. In 1875 he joined the Medical Society of Virginia, and attended many of its sessions. The interment was at West Point.

